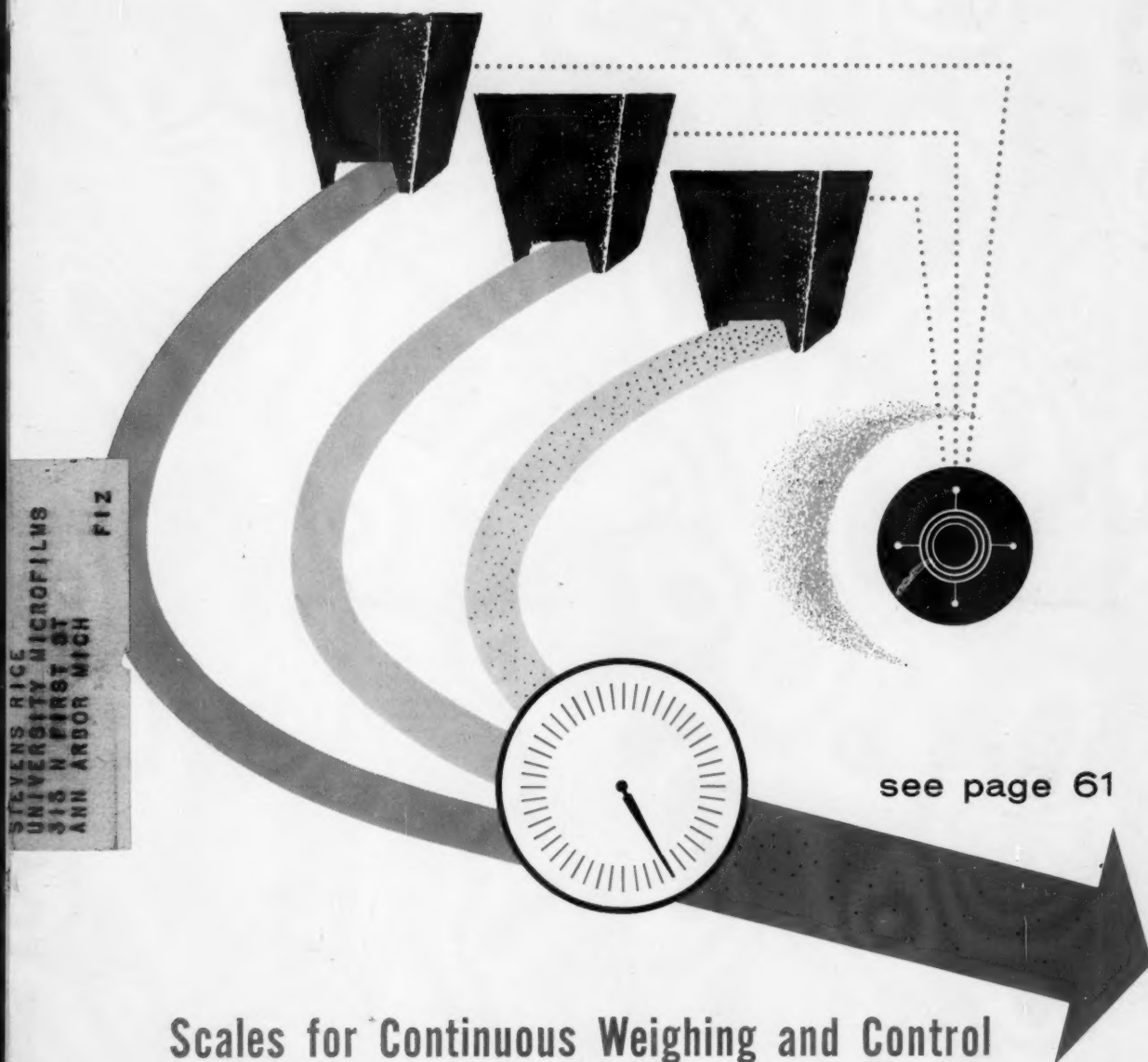


MATERIAL HANDLING

DECEMBER 1956

# FLOW

PRODUCTION • AUTOMATION • PACKAGING • SHIPPING



see page 61

**Scales for Continuous Weighing and Control**



• More than 40,000 buyers are reading this issue for help with their handling and packaging problems.

STEVENS RICE  
UNIVERSITY MICROFILMS  
313 N FIRST ST  
ANN ARBOR MICH  
F12

NOELTING

# Faultless

## CASTER MATERIALS HANDLING FACTS

**INCREASING BY 30 TIMES THE NUMBER OF LOAVES OF BREAD  
HANDLED AT ONE TIME, BY ONE MAN, WITH FAULTLESS CASTERS**



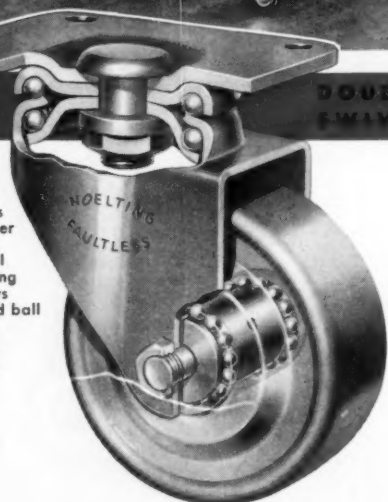
That's quite an achievement—yet Barbara Ann Baking Company, Los Angeles, did it with a simple handling system, featuring Faultless Castered trucks. *Products of similar size might be handled just as economically IN YOUR PLANT.*

First, freshly baked bread is taken from an automatic conveyor from the ovens, loaded on multi-tiered trucks and moved to a temporary storage area. Each fully loaded truck takes 270 loaves of bread. The trucks are temporarily parked side by side for maximum saving of valuable floor space. Next the trucks are easily and quickly moved to a bank of combined slicing and wrapping machines. Finally, the sealed and attractively packaged bread is stacked on wire pallets and moved in bulk on bread racks to city delivery trailer trucks. With this type of castered truck handling system, there is no costly unloading and reloading between operations.

Faultless 1100 Series Casters are used extensively in the Barbara Ann Baking Company operation. The object of this bread handling system is to increase the number of loaves that can be handled at one time by one man. This Faultless installation *has multiplied as much as thirty times* the number of loaves one man can handle in the transfer operation from baking ovens to wrapping machines. Barbara Ann's polished hard wood floors are fully protected by Faultless Plaskite and Drawn Steel Wheels having smooth, rounded edges which will not chip, mar or scratch.

**FAULTLESS  
SOLVES  
THE TOUGH  
JOBS**

1100 Series Swivel Caster shown with Drawn Steel Wheel having two full rows of hardened ball bearings in lubricated, dust-proof, hardened raceways.

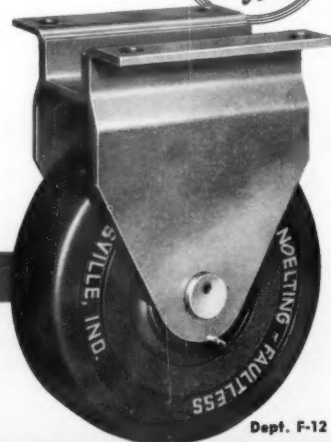


**DOUBLE BALL BEARING  
SWIVEL PLATE-CASTER**

The adjustable King Bolt holds the plate and two ball retainers firmly together, thus permitting the horn to swivel freely between the two full rows of balls. Stop nut on King Bolt assures solid construction for the life of the caster.

**SERIES 1700 RIBB PLATE  
LIGHT DUTY-CASTER**

Has the same over-all height and same bolt hole positions, center to center, as the corresponding size of Faultless 1100 Series Swivel Plate Caster.



Dept. F-12

**FAULTLESS-CASTER CORPORATION, EVANSVILLE 7, INDIANA**

Offices in Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Grand Rapids, High Point, Indianapolis, Los Angeles, New Orleans, New York, Philadelphia, Portland, Seattle, St. Louis, Canada: Stratford, Ontario.

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Want  
Really  
**Fast**  
**Retread**  
**Service**  
for  
**Molded-On**  
**Solid Tires?**



**Goodyear retreads and ships your Industrial Tires  
back in an average of just two weeks!**

It's as simple as ABC.

**A.** First, call your Goodyear Dealer for shipping and handling instructions.

**B.** Then you ready the wheels for shipment—remove bearings, races, washers and grease fittings—send wheels to us.

**C.** When we receive your order, we burn off the old rubber, shot blast the wheels and

recondition them completely. Next, we weigh out the new rubber for each wheel with scientific accuracy and mold it on to factory specifications.

The whole job takes us an average of only two weeks. Call your Goodyear Dealer about this fast, efficient and economical retread service—today. Or you can write: Goodyear, Industrial Tire Sales, Akron 16, Ohio.

USE THE RIGHT TIRE FOR THE JOB—BUY AND SPECIFY

**GOOD YEAR**  
**INDUSTRIAL TIRES**



Look for this sign; there's a Goodyear dealer near you.

Circle No. 65 on Reader Service Card for more information

DECEMBER 1956



# More Productive .



All kinds of processing and manufacturing plants are reporting exceptional satisfaction with the performance of the new-model HA "PAYLOADER" tractor-shovels. With their larger 18 cu. ft. buckets, they not only handle more tonnage of bulk materials than earlier models, but are way ahead of other front-end loaders in design and productivity — can deliver more tons per hour than heavier machines with larger engines.

Exclusive one-lever control handles tip-back, lift, dump and lowering of the bucket, simplifying and speeding operating cycles. The 40 degree tip-back of the bucket at ground level gets and holds big loads close and low without spilling. Hydraulic load-shock-absorber smooths the ride and permits higher travel speeds.

Fast, efficient and low-cost boxcar loading and unloading



Pick-up sweeper to clean floors, aisles, docks, and driveways

Special fine-buckets for odd pieces and "sifting" work



Lift-fork attachment for pallet loads

Push-fork attachment for spotting cars, skidding machinery, etc.



Barrels, carboys, bales, bags, drums also handled with bucket

Truck loading and unloading tool Here shown unloading metal chips.

# More Versatile

Greater productivity is only half the story of the model HA, since it can be readily adapted to do many other jobs on either a part-time or full-time basis. Quickly-attached floor sweeper, fork-lift and pusher-fork attachments, plus

special buckets are available to further increase its usefulness and make this "PAYLOADER" one of the most versatile, profitable machines any plant can own.

The knowledge and experience gained during the past 30 years in building thousands of tractor-shovels — more wheeled tractor-shovels than all others combined — is your assurance of superior design, engineering and performance. The "PAYLOADER" line is also a complete line — a size for every purpose — bucket capacities from 14 cu. ft. to 2¼ cu. yd. There is also a nearby "PAY-LOADER" Distributor with complete parts and service facilities.



**PAYLOADER®**

MANUFACTURED BY  
**THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.**

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

Circle No. 154 on Reader Service Card for more information



## THE FRANK G. HOUGH CO.

731 Sunnyside Ave., Libertyville, Ill.

Send information on "PAYLOADER" tractor shovels as checked

☐ MODEL HA ☐ LARGER SIZES

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

8





## ***Traveloader* does a job here no other handling machine can do!**

Traveloader easily picks up long, awkward loads from the side and carries them securely and speedily to near or distant points—without changing travel direction. This unusual feature enabled a large mid-western steel company to set up a highly efficient system for handling and yard-storing heavy curved corrugated steel plate sections.

Unit loads weighing up to 9,000 pounds are placed on the Traveloader by overhead crane at the fabricating department, transported to storage area and tiered along 12-foot aisles. As needed, sections are picked up by the Traveloader and delivered to the shipping platform. A special attachment permits handling of single sections or "split lifts."

As a direct result of this method the company uses yard space to much better advantage, fills orders faster and substantially reduces handling manpower.

The Traveloader also handles pipe, lumber, loads weighing over 4,000 pounds and any awkward loads. It does yard maintenance work, positions machinery and performs many other handling jobs not practical or possible with any other equipment.



Write for Bulletin 1360. It completely describes the remarkable TRAVELOADER that carries like a straddle truck, delivers like a road truck, and stacks like a fork truck.

**Baker**

handling equipment

**THE BAKER-RAULANG COMPANY**

1219 WEST 80th STREET • CLEVELAND 2, OHIO

A subsidiary of Otis Elevator Company

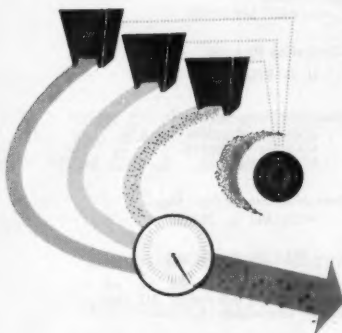
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FLOW

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### THE COVER

How production processes are being regulated by weighing scales which are proving to be the "brains" of many mechanized systems.



FLOW is published monthly by The Industrial Publishing Corporation, 812 Huron Road, Cleveland 15, Ohio, which also publishes:

FLOW DIRECTORY  
FLOW'S MATERIAL HANDLING ILLUSTRATED  
PRECISION METAL MOLDING  
APPLIED HYDRAULICS  
INDUSTRY AND WELDING  
WELDING ILLUSTRATED  
OCCUPATIONAL HAZARDS  
COMMERCIAL REFRIGERATION  
AND AIR CONDITIONING  
MODERN OFFICE PROCEDURES

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## SUBSCRIPTION RATES

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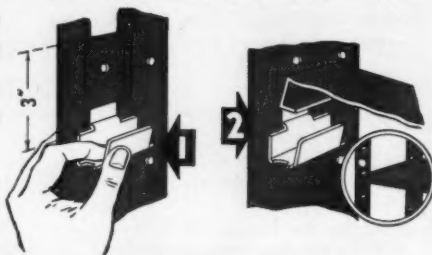
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The Industrial Publishing Corporation

saves money from first day of installation

# BORROUGHS STEEL SHELVING

Most simple—most adjustable—most rapidly assembled steel shelving on the market. Note the illustrations... ① shows how easily you insert shelf support brackets into slots. There's no fumbling with studs, bolts, nuts or lock washers... ② shows how quickly you tilt shelf into support brackets. Shelf is then ready for loading. Except for the top shelf (2 bolts and 2 nuts), no other bolts or nuts are required for shelves. You need no special tools. Each individual unit is complete in itself... no part depends on unit next to it... any unit or shelf can be moved independently.



send for catalog



Borroughs open and closed shelving installation at Automobile Club of Southern California

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**amp** Plants and other Subsidiaries: (American Metal Products Co.—Detroit, Michigan—Union City, Tennessee) (AllianceWare, Inc.—Alliance, Ohio—Kilgore, Texas—Colton, California) (General Spring Products, Ltd.—Kitchener, Ontario, Canada) (Tube Reducing Corp.—Wallington, New Jersey)

Manufacturers of quality products for automobiles, trucks, aircraft, offices, factories, warehouses, and homes.

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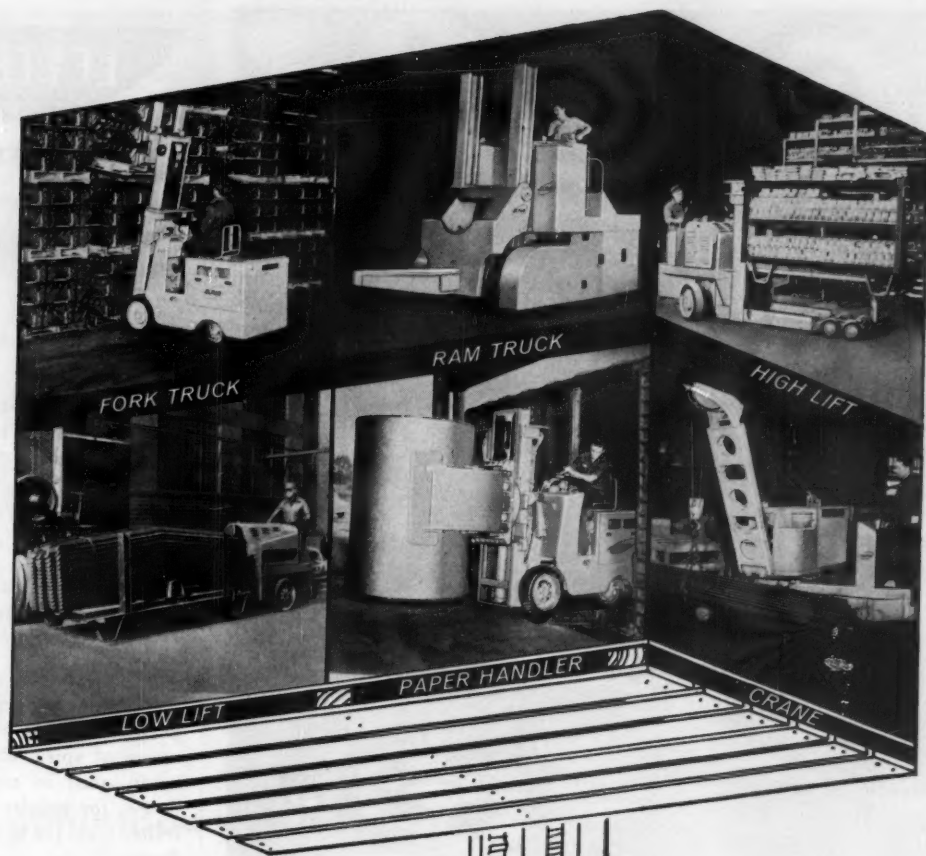
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FLOW





## **ELPAR** trucks meet **EVERY** need

**because Elwell-Parker:**

**FURNISHES ALL TYPES**—Elwell-Parker produces not one or two basic trucks, but *every* type needed to solve varying materials handling problems. There are E-P low lift platforms and high lift platform trucks, fork trucks, and mobile cranes . . . available in over 100 different sizes and capacities.

**ENGINEERS "SPECIALS"**—Not infrequently, the unusual shape or nature of the load requires a *specially designed* truck. Elwell-Parker has pioneered in this field—cutting costs for hundreds of industrial firms where standard trucks will not suffice.



**NEW GENERAL CATALOG**—describes the complete line. Send for your copy now.

**THE ELWELL-PARKER ELECTRIC CO.**

4291 St. Clair Avenue • Cleveland 3, Ohio



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## Moves Big, Heavy Loads... *baster!*

Lifting heavy loads, like this unwieldy 78 foot steel beam, is an easy operation for a UNIT Model 1020 Crane. The LIFT and CONTROL ability of UNIT permits loading and unloading with speed and accuracy.

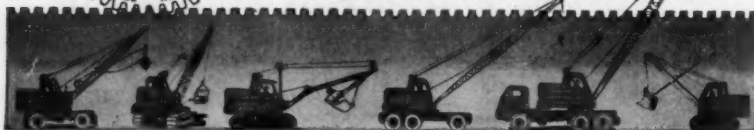
The Safety-promoting FULL VISION CAB enables the operator to see what he is doing at all times. If you have a material handling job that must be performed quickly, efficiently and with SAFETY... look into UNIT.



*Send for Bulletin Now*

**UNIT CRANE & SHOVEL CORP.**  
4521 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

*Geared to boost your earnings!*



A 8484-3/4-C

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## LETTERS

TO THE

EDITORS

### Equipment Inquiries

To FLOW:

We are interested in a pneumatic conveyor to handle prepared molding sand in our Iron Foundry.

Your assistance will be greatly appreciated.

J. Van de Water  
Worthington Corporation  
Harrison, New Jersey

To FLOW:

Would you please send us the names and addresses of manufacturers of spiral sliding chutes to be installed in multi-story warehouses for gravity sliding of materials from the upper to the lower floors.

E. L. Davis, Jr.  
Atlas Supply Company  
Winston-Salem, N. Carolina

To FLOW:

We would like to use a bin and feeder for storage and proportioning of light scrap metal, mainly food cans, pieces of wire and sheet metal, nails, etc.

Would you please direct us to any source of information you may know of.

Andrew W. Jenkins  
Material Handling Consultant  
Salt Lake City 10, Utah

To FLOW:

Can you supply us with the names of manufacturers of bag loading equipment for loading potatoes in ten pound bags.

Jess T. Caldwell  
Automatic Transportation  
Company  
Chicago 20, Illinois

*These letters are typical of inquiries received from FLOW readers. Wherever possible, such in-*



**Bolt together ideas!...**

## **Build to your specific needs with DEXION Slotted Angle**

DEXION Slotted Angle, the Idea material, is merely cut and bolted together to fill whatever ideas you may have for uses of framing material. Its utility is as broad as your imagination, and it requires no special skills for assembly. The only tools needed are a wrench and a DEXION cutter to build whatever ruggedly strong, economical and useful equipment you desire for your plant, warehouse or store.

Merely measure DEXION by counting cutting marks spaced every three inches. Then cut with an easy stroke of a clean-shearing DEXION Cutter. Carefully engineered DEXION slot and hole pattern matches up to make assembly easy, true and strong. And you simply bolt the pieces together to assemble whatever structure your good ideas have led you to erect.

You can obtain DEXION Slotted Angle in easy-to-handle packages of ten galvanized, cold rolled steel pieces in 10 or 12 foot lengths. And nuts and bolts are included. DEXION has two sizes: 3" x 1½" x .104" and 2¼" x 1½" x .080".

There are strong DEXION Panels available for shelving, table tops, or any decking you may want to apply to your DEXION framed structure. Special DEXION Casters will add mobility, if you desire.

**FREE DEXION Idea Book**—To demonstrate the infinite versatility of DEXION and give your imagination clues to its many uses, get this free DEXION Idea book. It contains scores of actual examples of how DEXION is being used. Merely write Dept. FDD-126, DEXION Division, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Illinois. We'll send the book plus the name of your nearest DEXION office or distributor.



**Moveable Shop Desk**



**Storage Racks**



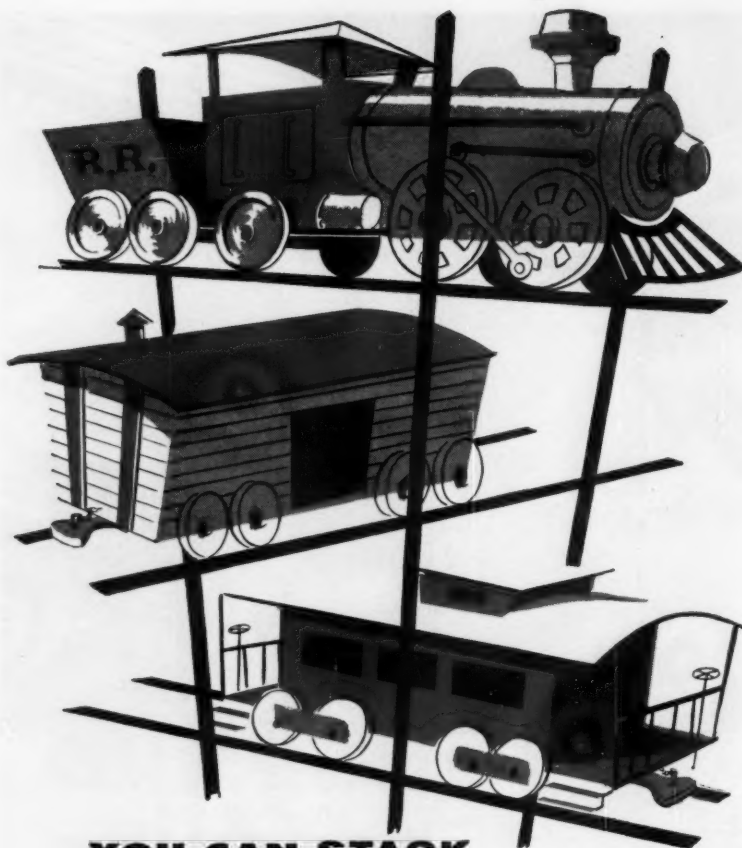
**Shelving**



# **DEXION SLOTTED ANGLE**

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## YOU CAN STACK OR SHIP **ANYTHING** ON EMI RACKS

Equipment Manufacturing storage racks that stack, cut time and handling costs, protect workers and stock, and speed inventory.

EMI racks are made of strong, welded tubular steel and are adjustable to fit any space or unit load. Special racks designed to your specifications. Field engineering service on any installation.

Before you decide on a new warehouse, additional storage space or the purchase of stacking equipment write for our new catalog.

"Keep your materials  
WELL STACKED!"

Write for our  
new Catalog.

PORTABLE  
STOCK RACKS

BOLTLESS  
PALLET RACKS

COIL REEL RACKS

DRUM RACKS

BAR STOCK RACKS

STACKING BOXES

# EQUIPMENT MFG. INC.

21552 HOOVER ROAD • DETROIT 5, MICHIGAN

Materials Handling Equipment

Stacking Racks for Industry

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## LETTERS

*Continued*

formation is forwarded as requested.

### MTM Comments

To FLOW:

One of my students in an MTM class which I am teaching has called my attention to the article in your October 1956 issue, titled "How to Use MTM for Determining Packaging Costs."

It impresses me as a most interesting and valuable article.

I would appreciate obtaining either a reprint of this article or else a copy of the October, 1956 issue if still available.

Earl H. Blekking  
Instructor, Industrial  
Engineering

University Station  
Gainesville, Florida

*Sent.*

### LP-Gas, Properly Used, Is Safe

To FLOW:

We are interested in the use of LP powered fork lift trucks for in-plant operation but understand that there is some question as to the toxic effects of fumes from this type fuel.

We would very much appreciate your comments or any information you may have that will help us clarify this issue.

H. D. Campbell  
Campbell Chain Company  
York, Penna.

In the Ford Motor Company research on LP-Gas for industrial trucks (Flow, May 1956), it was reported that tests made by the Industrial Hygiene Dept. showed negligible amounts of carbon monoxide with propane. Serious malfunctions of equipment will, however, cause a rise in the carbon monoxide content of the exhaust. Preventive maintenance will prevent such malfunctions. A reprint of the article has been provided to Campbell.

# Can a Towmotor Solve My Handling Problems?



**YES!** Towmotor Fork Lift Trucks and Towmotor Job-Planned Accessories are "tailor-made" for your particular application in many ways. Soundly engineered by materials handling specialists, the Towmotor line includes 15 different models and more than 60 interchangeable attachments, for every handling need.

Read how other companies use Towmotor Equipment to Cut Costs!

Brick Manufacturer: Ask for Job Study # 107  
Cotton Warehouse: Ask for Job Study # 109  
Transfer Company: Ask for Job Study # 111  
Fruit Grower: Ask for Job Study # 110  
Metals Plant: Ask for Job Study # 108

Ask your nearest Towmotor Representative to show you what Towmotor equipment can do to speed your materials handling, cut man-hour costs and make maximum use of storage space! . . . or write for Certified Job Studies covering *your* industry. TOWMOTOR CORPORATION, Div. 812, 1226 E. 152nd St., Cleveland 10, Ohio.

America's best engineered fork lift truck

**TOWMOTOR**  
THE ONE-MAN-GANG

THERE'S ONLY ONE FORK LIFT TRUCK CALLED TOWMOTOR  
Circle No. 138 on Reader Service Card for more information

# CM HOISTS

## Are you wasting OVERHEAD plant space?

It costs money to light, heat and shelter overhead plant space. Get a return on your investment. Use this space to move or store materials with CM Hoists. You'll have more valuable floor space for other operations.



A favorite with production men

### CM METEOR

WIRE ROPE ELECTRIC HOISTS

Capacities: ½ to 5 tons

- Designed for continuous duty. Airplane type cooling. Thermal protection for motor.
- Compact, enclosed construction. Operates under dusty, moist, steam or acid fume conditions.
- Balanced design. Low headroom.
- Only 110 volts at push button control. Safety type hook blocks.
- Precision bearings. Helical gears.
- Long life with minimum maintenance.



• **METEOR Catalog 142**... shows all details of hoist suspension, operation and construction. Request one today for your file.

**ALSO**... Lodestar Electric Hoists (½ to 1 ton), Cyclone Hand Hoists (½ to 10 tons), CM Pullers (¾ to 6 tons), CM Trolleys and CM Cranes.

➡ **Call the CM distributor for catalogs, prices and quick delivery from stock**



## CHISHOLM-MOORE HOIST DIVISION

COLUMBUS McKINNON CHAIN CORPORATION

TONAWANDA, NEW YORK

REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND

In Canada: McKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO  
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## NEWS

from the

## SALES FIELD

A realignment of its sales department has been announced by The Colson Corporation, according to Norman A. Price, executive vice president. W. C. Shea, formerly director of sales, has been named assistant to the vice president for sales. D. F. Adams, who previously directed sales of industrial products, is now sales manager. J. M. Spooner, formerly advertising and sales promotion manager, has been promoted to the new position of director of marketing. S. A. Leone becomes manager of special products.

Towmotor Corporation has opened a new and larger service branch at Camden, New Jersey, to handle sales and service of Towmotor industrial lift truck equipment throughout the Delaware Valley area, according to Charles E. Smith, president. Manager of the new branch is W. G. Wilhelm, and he is assisted by W. M. Keene, Jr. The new branch will provide increased facilities for the firm's equipment sales, parts distribution, mechanical overhaul and unit rebuilding work. In addition, it will be the base for eight Preventive Maintenance and Service mobile units.

W. J. Klein is appointed vice president and director of sales, and W. L. Voegeli is named general sales manager, Tractor Group, Allis-Chalmers Manufacturing Company. Klein was formerly vice president and general sales manager, Tractor





## WATCH THIS TRACTOR BECOME A FLEET

### ...and your material handling problems become a breeze

With an Allis-Chalmers HD-6G tractor shovel, you simply remove and replace four pins to change from a bulk loader to a lift fork, crane, bulldozer or ditcher. The switch takes two men less than 15 minutes, yet each new attachment can save many hours of hard labor.

With its standard  $1\frac{1}{2}$ -yd bucket, you can stockpile, reclaim and load bulk materials of all kinds. Or you can double your speed in coal, coke, cinders and snow with a big  $2\frac{1}{4}$ -yd light materials bucket.

Then, by changing from one attachment to another, you handle packaged and palletized loads, move heavy machinery, level yard storage areas, maintain plant roads, landscape, dig trenches for pipe and foundation footings, handle countless other jobs—all on one basic equipment investment.

Ask your Allis-Chalmers dealer to show you how its unmatched versatility can streamline many jobs in and around the plant. Write for free literature.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

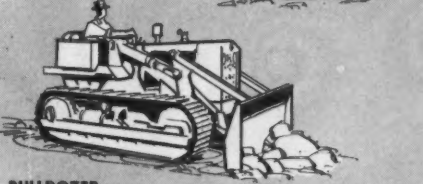
# ALLIS-CHALMERS



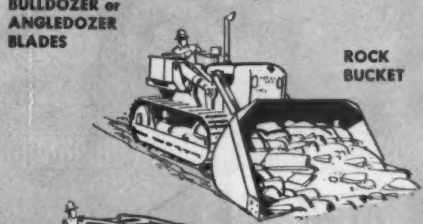
**CRANE HOOK**  
6,700-lb capacity  
Maximum height (hook to ground), 12'8"



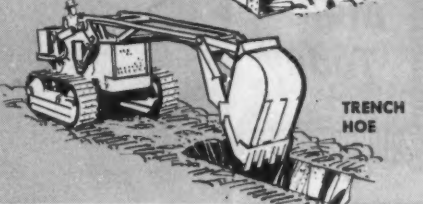
**LIFT FORK**  
Stacking height, 9'10"  
Available with fixed or adjustable line spacing



**BULLDOZER or  
ANGLED OZER  
BLADES**



**ROCK  
BUCKET**



**TRENCH  
HOE**

Circle No. 4 on Reader Service Card for more information

# ONLY WENDWAY

can do so many  
jobs *So Well!*

To carry your production from the initial processing stage right through to the shipping department . . . just press the control button on a Wendway Light Product Conveyor. Wendway delivers a steady flow of products or materials smoothly, quietly, wherever you need them. Up, down, around, through walls and back again. It's that versatile! See for yourself how Wendway can save you money in space, handling costs, convenience and time. Just fill in the coupon below.



Wendway Conveyor belting, constructed of special #7 wire and fabricated on specialized machines, is an exclusive development of Union Steel Products Co.



*Mail  
Today*

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## SALES FIELD

*Continued*

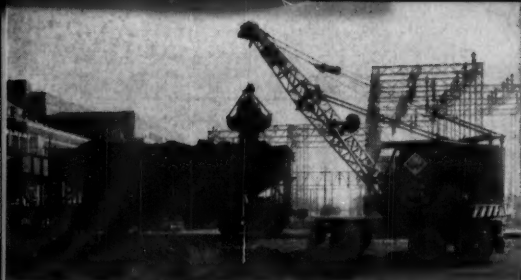
Group, while Voegeli has been assistant director of engineering. The three divisions of the Tractor Group are Farm Equipment, Construction Machinery and Buda.

Fort Worth Steel and Machinery Company has named two new distributors in Illinois. They are Consolidated Sales Company, of Mt. Pulaski, and Sagamon Industrial Supply Company, of Springfield. Both will distribute Fort Worth mechanical power transmission equipment, and the Mt. Pulaski firm will also carry the Fort Worth line of material handling equipment.

Silent Hoist & Crane Co., Inc. has appointed Chester J. Selden as district sales manager for the firm's midwest territory. Selden was formerly supervisor of material handling engineering for the Ford Division's Dearborn Assembly Plant. His appointment was announced by J. W. Wunsch, Silent Hoist president.

The Jeffrey Manufacturing Company has opened a new warehouse in San Francisco, to augment the stock of 17 Jeffrey distributors in 11 western states. The new facility will provide prompt delivery for customers west of the Rockies. Stanley M. Mercier is manager of the San Francisco sales headquarters. William T. Davis serves as application engineer, and Henry G. Neubaumer is warehouse manager.

Three new distributors have been named by the Industrial Truck Division of Clark Equip-



With a fast switch from clamshell to hook on the front end, Philadelphia Electric Co.'s Limas handle anything from the loading of slag or ashes to lifting bushings from transformers during repair work. Their three Limas give constant peak performance with maximum flexibility, low maintenance and high availability.



Jones and Laughlin Steel Corporation's Cleveland Works reports, "We really benefit from our Lima's versatility. For several years it loaded limestone at blast furnaces—24 hours a day, 7 days a week without breakdown. Since then, it's been used—with hook or magnet—to load or unload rails, scrap, castings, coil steel and other receivable materials in all parts of the plant. It works in areas where other equipment can't. Performance has been excellent."



In The Midvale Co.'s Philadelphia yard their Lima handles scrap up to 20 tons. They state, "Our Lima does the work of two locomotive cranes. Its faster operation and greater work output has saved us many hours on the job with low maintenance and fuel consumption."



The Cleveland Electric Illuminating Company relates, "By easily interchanging clamshell and hook on the boom, we've used our Lima for general construction work during building of the Eastlake plant . . . coal handling . . . stock materials handling . . . laying tracks and ties for rail spurs . . . moving steel used in high wire work . . . and many other jobs. For four years, it's given us exceptional performance with no major downtime."



## Versatile, fast-working LIMAS solved yard materials handling problems for these four users

These and a host of other users across the country are finding wagon and truck mounted Limas best-suited for a wide variety of materials handling assignments. In yard handling operations these rugged, highly mobile machines move anywhere at top speed, get jobs done quickly, dependably and economically. Easily interchangeable front end attachments—shovel, dragline, clamshell, pullshovel or pile driver—give Limas outstanding flexibility for tackling the toughest job requirements under all operating conditions.

It'll be to your advantage to check the complete line of wagon and truck (or crawler) mounted Limas . . . designed and built with Lima quality-extras to give you high output with low operating cost and downtime. Contact your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



**LIMA** SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

**BALDWIN-LIMA-HAMILTON**

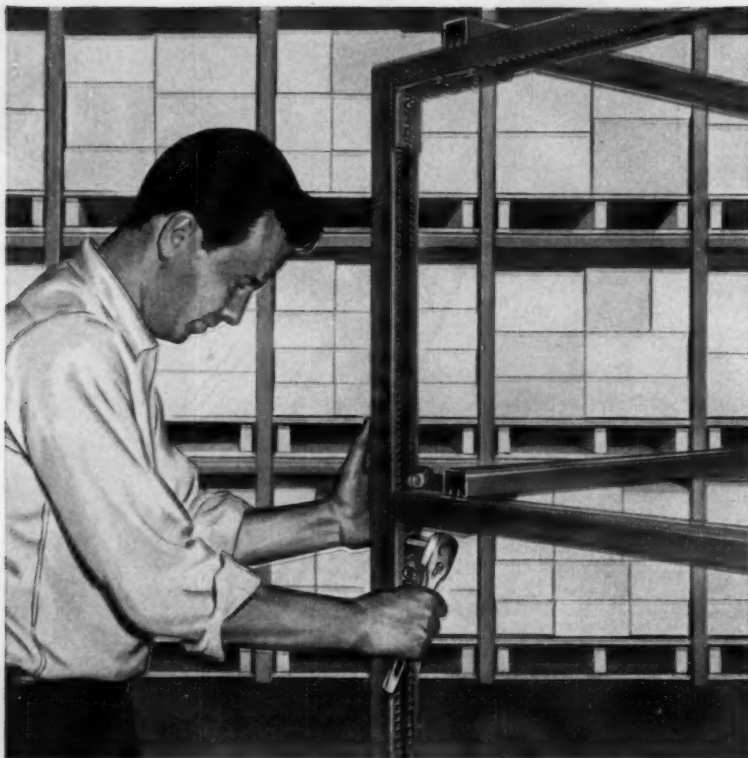
Construction Equipment Division—LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

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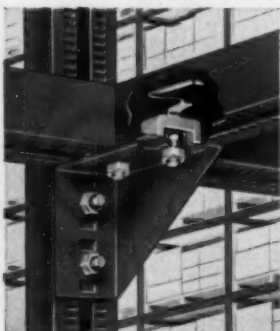
DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD





**1800 Pre-Engineered rack designs  
to meet your storage requirements**

## Mult-A-Frame It!



See the secret! Fully-locking serrated channel, exclusive Z-type spring-T-bolt and embossed safety-lock fittings. No jackknifing, no side-sway.

See our catalog in SWEET'S S



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What's different about the MULT-A-FRAME method? Well . . .

**IT'S THE PRE-ENGINEERED WAY.** MULT-A-FRAME gives bolted construction savings with made-to-order convenience. Pre-engineering is the secret. You look over our 1800 standard rack designs; identify your pallet type; list your load requirement; select rack size and order. They're completely expandable — anytime.

**IT'S THE 100% SALVAGEABLE WAY.** Rack areas change from time to time? Only takes a wrench to disassemble and rebuild MULT-A-FRAME racks. All MULT-A-FRAME parts are completely reusable.

**IT'S THE LOW LABOR COST WAY.** No skilled labor is needed to MULT-A-FRAME. So your construction costs are rock-bottom. If you'd like to learn how MULT-A-FRAME pre-engineered racks save you time and money, we'd like to mail you our new rack catalog — "Pre-Engineered and Expandable Racks" — showing 1800 different standard rack designs. Send for your free copy — today.

### MULT-A-FRAME DIVISION

Ainsworth Manufacturing Corporation  
1471 E. Atwater St., Detroit 7, Mich.

### SALES FIELD

*Continued*

ment Company. Cromer Industrial Equipment, Inc., Aurora, Ill., will sell and service Clark fork trucks, straddle carriers and powered hand trucks in seven Illinois counties. Artim Equipment Company, Hammond, Ind., is the new distributor in that area. Gerahty Industrial Equipment, Inc., Rockford, Ill., becomes Clark distributor in seven counties in Illinois and six in Wisconsin. In addition, a Clark factory sales and service branch has been established in Chicago.

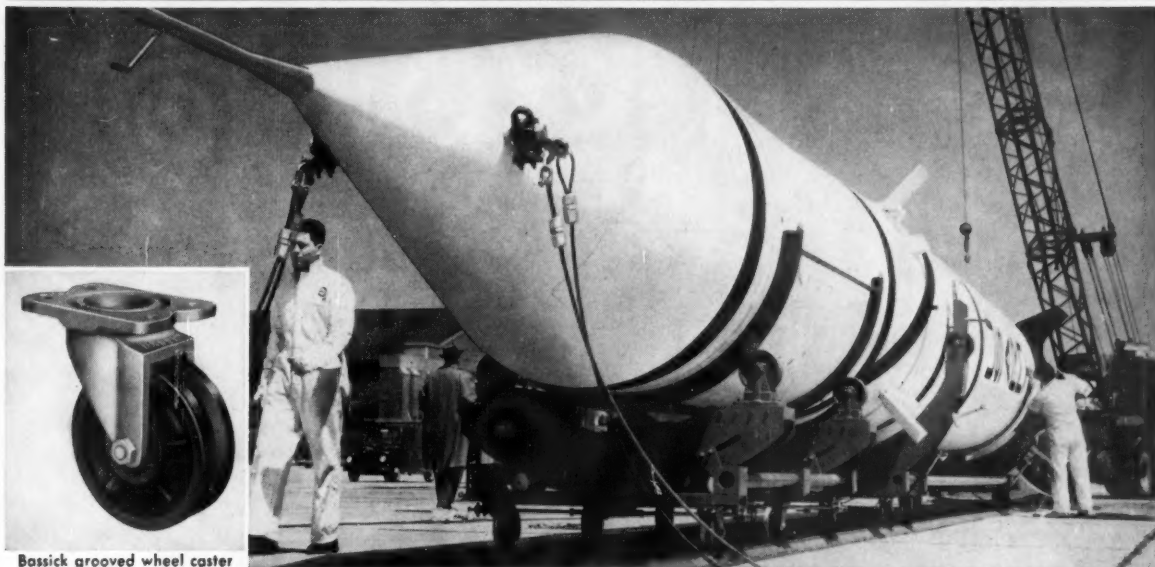
Vac-U-Lift Company has appointed Blair-Martin Co., Inc., of South Pasadena, California as their exclusive sales representative for California, Arizona and Nevada. Vac-U-Lift, a division of Hufford Machine Works, manufactures a complete line of vacuum operated lifting equipment used in conjunction with overhead hoists, cranes, and material handling trucks.

John R. Fuller has been appointed sales manager of the Pittsburgh district of the Hewitt Rubber Division of Hewitt-Robins, Inc. At the same time as it made this announcement, the firm also revealed plans to establish a new warehouse and sales office in Fort Washington, Pa. The new building will be the headquarters for the company's Philadelphia district.

Gifford-Wood Company has named Walter S. Roth as district manager of its new Cleveland, Ohio sales office. Roth will be in charge of engineering, sales and customer service of Gifford-Wood's line of automatic conveying equipment and material handling systems in the Cleveland territory.

# MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★



Bassick grooved wheel caster

## Long range missile on Bassick casters

Photographed at the recent Armed Forces Day, the prototype Redstone Army missile gets special handling.

That's why on both top and bottom of the missile stand you see Bassick grooved wheel casters. On inverted-angle iron tracks, they provide absolute control and smooth, safe rolling. The grooved wheel casters on top of the stand are used to

rotate the missile to make various instrument ports and panels more accessible.

Note, also, that the stand has movable caster mountings so that the wheels can always be positioned under the missile's center of gravity (which changes during production and as fuel is added). The Army's Redstone is expected to operate at ranges up to 1500 miles.



## Shakespeare on casters

The big stage at the American Shakespeare Theatre, Stratford, Conn., (that's a scene from King John, above) can be moved out of the way for local benefits and community projects. The entire stage moves easily on 44 Bassick Casters.

This unusual job is just one of the many new caster applications turning up today. Some of them might pay off in your business; talk to your industrial distributor.

## Rol-Rack on Bassicks

That's the name of this rolling book case that's going places on rubber-tired Bassick casters. It's only one of hundreds of racks and furniture that are easier to use (easier on floors, too) with Bassick casters. Maybe some of your plant equipment could do a better job on casters.



## Fork Lift Truck rides Floating-Hubs

The 3000 lb. capacity Raymond Reach Fork, "the truck with the boarding house reach," operates in narrow six-foot aisles on Bassick Floating-Hub casters. This is rugged duty for any caster, and calls for constant swivelling under power and over all types of floor conditions. Because the Bassick Floating-Hub casters give long life and a stable ride, The Raymond Corporation is very satisfied with them.

THE BASSICK COMPANY Bridgeport 2, Conn. In Canada: Belleville, Ont.



MAKING MORE KINDS OF CASTERS — MAKING CASTERS DO MORE

## Ask your Bassick Distributor

If you let him in on your problems, you'll find his broad experience a big help in working out solutions. And his product knowledge can often save you money, too. Always ask him to recommend which Bassick caster can best handle a specific job.

67

# CLARKLIFT—



## ONE HYDRAULIC LEVER

### Directional Operation

Lift load.....Move lever **Up**

Lower load.....Move lever **Down**

Neutral.....Self-centering

Tilt forward.....Move lever **Forward**

Tilt back.....Move lever **Back**



# *it almost operates itself . . .* *. . . with comfort and safety*

From the single lever control of the hydraulic system to the wide foam rubber seat, your driver works in comfort and safety. Smooth, powerful acceleration, reduced steering effort and torque multiplied brakes are just a few of the many refinements incorporated in this new Clarklift to increase driver efficiency.

## **Reduced steering effort**

Greatly improved weight distribution and large steer tires reduce steering effort when empty. Proper angle of steering wheel assures most effective leverage and comfort while maneuvering and stacking.

## **Excellent visibility**

The unique nested construction of the new safety roller upright provides more "see-through" visibility. Cylinder placement and wider spaced lift chains present a picture window in front of the operator for unobstructed visibility in front of the truck.

## **Positive upright control**

Precise control of the upright is afforded the operator with the new cushion valve, tilt lock valve, flow regulator and full-feathering main valve. Regulated lowering, elimination of sway and cushioning of sudden shocks make this the most controllable and safe upright available.

## **Greater riding comfort**

The longer wheelbase and large steer tires smooth out shocks and bumps. The longer wheelbase also permits the driver's seat to be farther forward toward the center of the truck, thus smoothing out the ride.

**CLARK  
EQUIPMENT**

*Industrial Truck Division  
CLARK EQUIPMENT  
COMPANY  
Battle Creek, Michigan*



## **Adjustable Seat**

Foam rubber, extra wide and adjustable. This seat accommodates any size operator, in comfort, with ample leg room. Four inches fore and aft adjustment combined with the self-adjusting seat back assures proper support and reduced driver fatigue.



## **Clear Floorboard**

Look at the uncluttered floorboard. No clutch pedal or shift levers to worry about, and the wide brake pedal can be operated with either foot. Difference in accelerator and brake pedal height is only 1 inch, which greatly reduces leg movement.

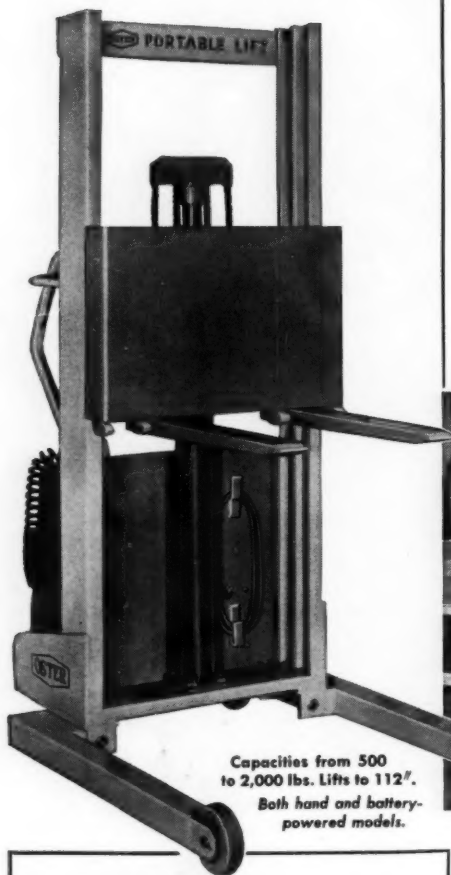


...an Old Dependable Name  
with a New Dependable Product!

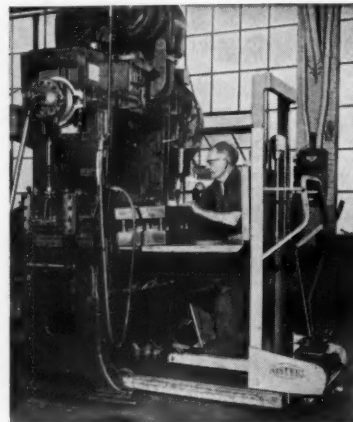
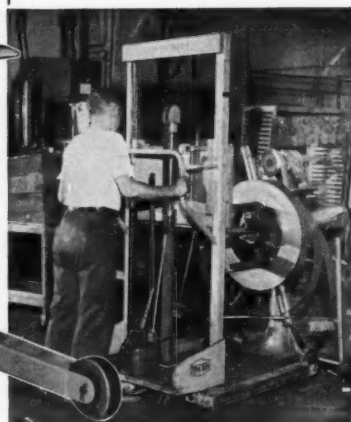
**PRESENTS A COMPLETE NEW LINE OF**

# PORTABLE HYDRAULIC LIFTS

**for stacking, unloading, machine set-up  
overhead maintenance, and faster  
handling of work in process!**



Capacities from 500  
to 2,000 lbs. Lifts to 112".  
Both hand and battery-  
powered models.



## ONLY OSTER OFFERS YOU ALL OF THESE IMPORTANT FEATURES

### 1. FOUR CARRIERS IN ONE

... every Oster Lift can be used as a platform truck, straddle fork truck, portable elevator and shop crane.

### 2. SWING-TYPE SUPPORT LEGS

... an exclusive Oster feature in 1000 and 2000 lb. models ... converts the Oster Lift from a standard platform lift to a straddle-type pallet truck in a matter of seconds.

### 3. OPTIONAL POWER UNIT

... complete 12-volt packaged unit, with built-in battery charger, available either as original equipment or as an accessory for conversion of hand-operated models. A remote control push-button station is standard equipment.

### 4. STRENGTH WHERE IT COUNTS

... carriage backplate made of special heavy-gage weldment. In large-capacity models, rugged masts further reinforced with center rail of high-quality steel.

### 5. FLOW CONTROL VALVE

... controls speed of carriage descent. Used with special high pressure tubing, valve assures positive protection against free fall of load.

## OSTER 1,000-LB. LIFT DOES DOUBLE DUTY AT WESTINGHOUSE PLANT, LIMA, OHIO

**STEEL COILS**, weighing 275 lbs., are handled three at a time by the lift during delivery from storage to the feeding spindle. Here, the lift eliminates the need for manual effort in positioning a coil on the spindle.

**PROGRESSIVE TYPE DIES**, some four feet in length and weighing up to a half-ton, are moved by the Oster lift from storage to the presses. On arrival at the press, the lift platform is adjusted to press bed height and the die easily inserted into position.

Already tested and proved by many years of research and service in both small and large plants, these new Oster Portable Lifts offer a combination of design and safety features which are not available in comparable types of lift equipment.

Get complete details, prices and specifications from your nearby Oster Lift Distributor, or write to our main offices for full information and the name of your nearest distributor.

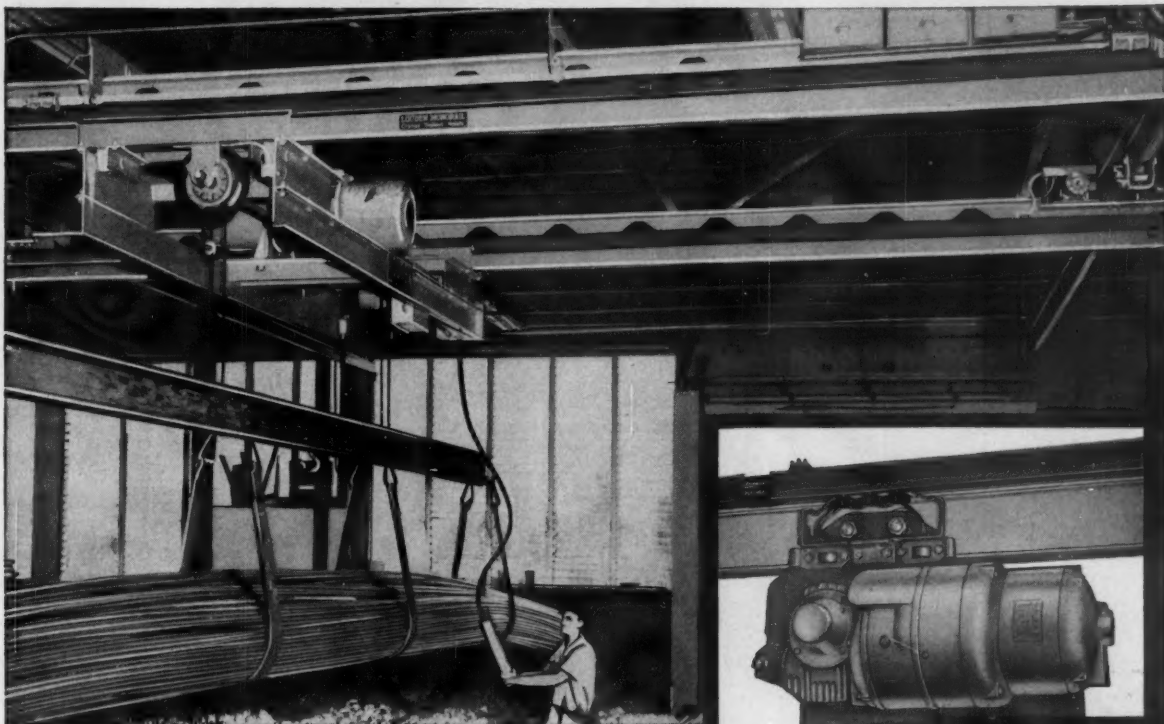
**THE OSTER MANUFACTURING CO.**

Material Handling Division

1338 EAST 289th STREET, WICKLIFFE (CLEVELAND), OHIO

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# LOUDEN *SHOK-PRUF* ELECTRIFICATION makes good handling installations better



Louden SHOK-PRUF Electrification in Adams Engineering self-contained manufacturing plant. Aisle space savings pays for Louden installation;

Exposed conductor bars are a hazard to men working about a plant. There is only one way to eliminate the risk . . . by providing an effective insulation barrier . . . Louden Shok-Pruf Enclosed Electrification. The Shok-Pruf scheme completely isolates and insulates the conductor bar, completely covering it on all sides with heavy, tough and durable Neoprene. The only opening to the conductor bars is a narrow channel at the bottom through which the arm of the current collector passes. The wrap-around insulation prevents any possible contact and removes all hazards. Workmen welcome this protection and work effi-

ciency increases at once. Safety records improve; insurance costs go down. A typical Louden Shok-Pruf installation is the plant of the Adams Engineering Company, Miami, Florida, makers of aluminum lawn and porch furniture. Shok-Pruf is another development typical of Louden broad-range engineering experience, knowledge and equipment that turn to fullest account the fundamental advantages of overhead handling. Shok-Pruf Electrification is available for any crane or monorail installation. Consult a Louden representative. Write, phone or wire today.

## Louden

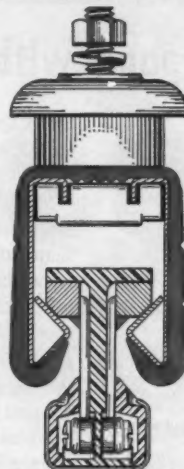
**MONORAIL & CRANES**

SINCE 1867 . . . THE FIRST NAME IN MATERIALS HANDLING

DECEMBER 1956

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Close-up of SHOK-PRUF insulated conductor bar, current collector and Louden Moto Veyor drive unit.



Side view of SHOK-PRUF channel type conductor bar.

Cross-section SHOK-PRUF conductor bar and collector.

- 1 Neoprene insulation.
- 2 Heavy zinc-coated steel conductor.
- 3 Multiple, articulated collector shoes give greater contact surface, are self-cleaning, eliminate arcing, give up to 10 times longer life.
- 4 Articulated collector overcomes misalignment at transfer points.

**THE LOUDEN MACHINERY COMPANY**

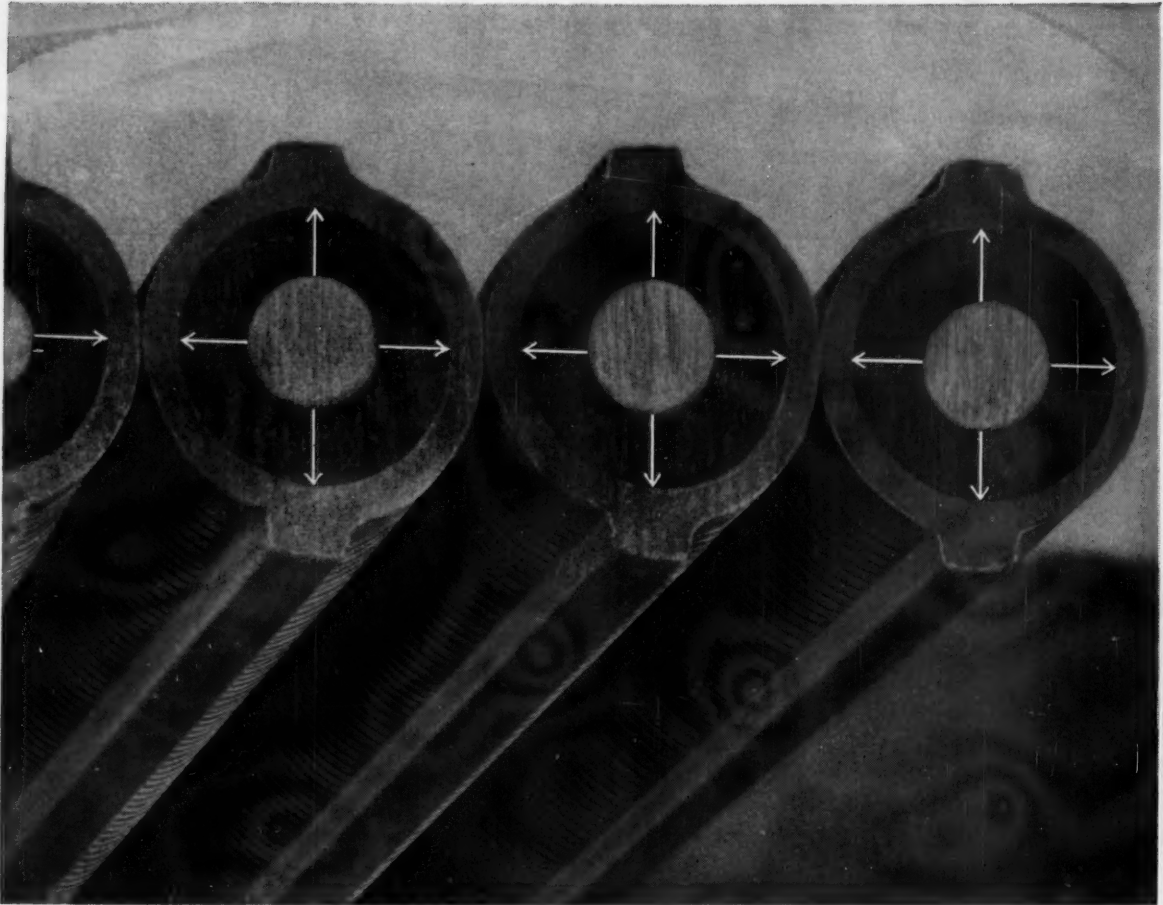
6312 Broadway, Fairfield, Iowa

A Subsidiary of Mechanical Handling Systems, Inc.



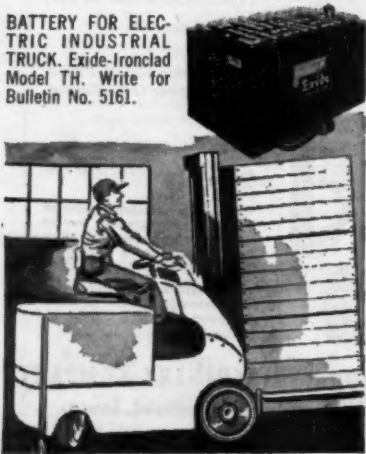
# EXIDE-IRONCLAD BATTERIES

For electric industrial truck operation



## Power tubes expand without shedding — preserve battery life

BATTERY FOR ELECTRIC INDUSTRIAL TRUCK. Exide-Ironclad Model TH. Write for Bulletin No. 5161.



Every time you discharge a storage battery, the active material on the positive plates expands. But the plate grids don't expand. This is basic.

On most batteries, the expanding active material tends to shear off from the nonexpanding grid every time the action takes place. But this can't happen in the Exide-Ironclad Battery. The reason is simple.

Active material is formed concentrically around the spinelike grid and held inside the plastic tubes. Expansion is predominantly in an outward direction—hence no shearing. Active material remains firmly locked to the underlying grid structure. And the flexible plastic tubes yield and take up as needed.

This extra protection against shedding of active material is only one of the many reasons for the long life of Exide-Ironclad Batteries. When you order heavy duty batteries, or the equipment requiring them, be sure to specify Exide-Ironclad. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.

# Exide®

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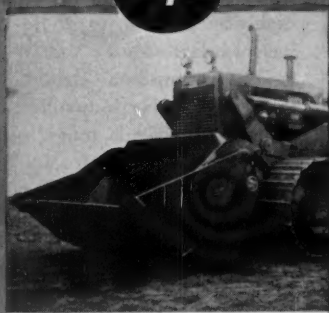
NOW—GET BIG-SCALE  
4-MACHINE UTILITY IN  
EXCLUSIVE NEW

# 3-yd TD-18 4-in-1



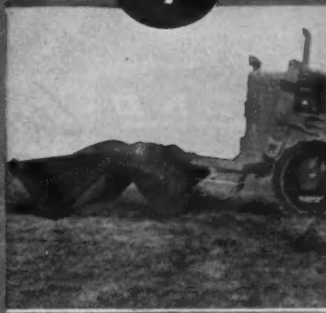
Here's the big one of the famous  
**International® Drott® 4-in-1**  
Skid-Shovel family: the new 3-yd. TD-18!

## It's a 3-yd. Skid-Shovel...



with Drott's exclusive "concrete-shattering" triple-power pry-action break-out — and 42° ground-level bucket roll-back on the exclusive Skid-Shoes!

## It's a 3-yd. Clamshell...



that "surrounds" loose materials and fills in one fast gulp — and gives you a dumping height advantage of 30 inches over ordinary roll-forward buckets!

## It's a 3-yd. Bullclam...



that gives you speedy "carry-type scraper" action to grade, strip, or spread, using clam-lip control — and to compact materials, using loaded bucket and hydraulic down-pressure!

## It's a BIG -capacity Bulldozer



with clam lip up, and cutting edge and shoes of its earth-rolling blade on the ground. Hydraulic "radius control" lets you regulate dozing depth with ease and accuracy.

Touch the machine-selector lever—prove you can beat a fleet of limited-duty rigs with the new 3-yard TD-18 Four-In-One. Compare Drott exclusives like shock-swallowing Hydro-Spring and heap-keeping raise action. Measure your big earning power potential with this versatility unlimited. Or try the one-yard TD-6; 1½-yard TD-9; or 2¼-yard TD-14 Four-In-One. See your nearby International Drott distributor for a demonstration!

International Harvester Company, Chicago 1, Illinois  
Drott Manufacturing Corp., Milwaukee 15, Wis.



See you at the ROAD SHOW  
CHICAGO

Jan. 27-Feb. 4, 1957

# INTERNATIONAL DROTT®

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# Most widely-used hand pallet truck in America



MODEL L2P  
Capacity 2,000 lbs.



## Hydraulic PALLET TRUCK

**BIG CLAIM** for a little truck . . . but it's absolutely true! More RAYMOND Lightweight Hydraulic Pallet Trucks are purchased today than any other hand pallet truck.

**WHY?** Because this RAYMOND Truck does so many jobs so well . . . is superbly built to withstand years of use and abuse. Lightweight to lessen operator fatigue, easy to maneuver and pull. Patented booster roll provides effortless pallet entry. Convenient foot pedals lift and lower your load. Completely precision hydraulic for dependable operation. Includes aluminum alloy construction, husky one-piece welded steel frame, safe dual-purpose brake, 270° turning radius.

● **MAIL COUPON** for full details!

### The RAYMOND CORPORATION

3310 Madison St., Greene, N. Y.

☐ Send bulletin on Lightweight Hydraulic Pallet Truck.

☐ Please have a RAYMOND representative call.

NAME _____	TITLE _____
COMPANY _____	
STREET _____	
CITY _____	STATE _____

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## HIGHLIGHTS of the MONTH'S NEWS

### Something for Everybody

**T**HE NUMBER of courses, lectures, clinics and symposiums devoted to material handling—and inter-related subjects—is increasing at a steady rate. This development is normal, of course, when one considers the intensity and scope of the need. It is a natural consequence of the pressures exerted by our expanding economy.

The respectable stature achieved by most of the training media is highly gratifying to those who have worked so long and hard to gain a professional standing for those specializing in material handling. It is difficult, today, to find a technical society or association with a membership that is not intensely interested in material handling or package engineering. Indeed, it's a safe guess that every association concerned with metal producing, forming, or working has material handling on every important agenda. And the same is true of a good number of activities not particularly concerned with metal—for example such worthy organizations as the American Bottlers of Carbonated Beverages, the National Retail Lumber Dealers' Association, and the National Wholesale Druggists' Association.

The serious material handling and/or packaging specialist has a really tough time covering every worthwhile meeting. They're going on at widely scattered locations almost all the time. Each offers information important to others. We've heard of a case where an engineer from a public utility picked up a number of good ideas from the Packaging Machinery



Manufacturers' Institute show and about a steel warehouseman who was intrigued by a system he discovered at a plastics exposition.

Within the physical limitations of time and travel, staffs of all industrial publications bring the highlights of such meetings to many thousands of readers. But there is no substitution for the free interchange of information on a personal basis, the participation in discussion and debate, that comes with attendance at such meetings. There must surely be a way for "specialists" to participate more directly in activities important to them. It's a complex problem to which we're giving a lot of thought, and about which we'll have more to say later.

\* \* \*

#### 405 Percent Increase

**A**LTHOUGH the material handling industry—comprising the producers of material handling equipment—cannot be called "large" as compared to many others, its growth in ten years has been phenomenal. This was pointed out by Howard M. Palmer, Vice President and General Sales Manager of Lewis-Shepard Products, Inc., speaking at a recent Material Handling Clinic sponsored by the Boston Branch of the National Metal Trades Association.

A 405 percent increase since 1946, Palmer noted, is well above that for most growth industries and reflects the expanding need for material handling equipment.

It is important, he stressed, for individual companies to avail themselves of the latest equipment and handling methods developed by this industry if they are to remain competitive. The wide variety of equipment now being produced has been designed to meet almost any material handling situation, he noted. The stage is set



H. N. Palmer



Raymond Platform Truck operates in narrow aisles and congested work areas, bringing skid loads right to machines. Truck is available in 2,000, 3,000 and 4,000 lb. cap.; telescopic, non-telescopic models.

## Saves \$7,500 Annually

with



PLATFORM

## Tiering Truck

"We lost approximately 100 work hours a week when our machine operators moved work-in-process manually," says Porter K. Bennett, president of Champion Sheet Metal Co., Inc., Cortland, N.Y. "Then we installed a Raymond Platform Tiering Truck.

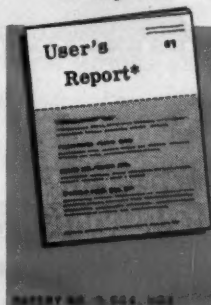
"Now our entire production area is serviced by this one truck. We use it to transport raw stock and work-in-process, move dies to and from presses, as well as to load motor trucks with finished parts for shipment. Frankly, it's become practically indispensable to our operation.



Combination of die racks and Raymond Truck enabled Champion Sheet Metal to increase usable floor space in die storage area by 30%.

"The Raymond Truck has increased our productive effort 5%, saving at least 100 man-hours per week. This has meant a direct saving of at least \$7,500 annually with the result that the truck paid for itself in six months—a 200% return on our investment."

**Want More Facts?** Mail coupon for free User's Report, showing dollar-and-space savings firms like yours enjoy with Raymond Trucks.



### The RAYMOND CORPORATION

3315 Madison St., Greene, N.Y.

Please send User's Report, showing Raymond Trucks handling: \_\_\_\_\_

(PRODUCT)

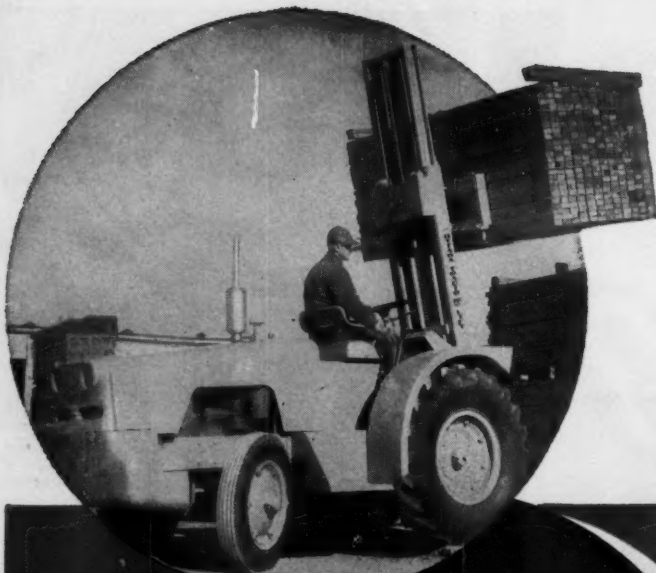
NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

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No Matter How **BIG** the Load  
or How Rough the Terrain

the **NEW**  
**OTTAWA**  
**TRACTO-LIFT**

Handles the Load Faster, Easier  
... at less cost!

**KING**  
**of OUTDOOR FORK LIFTS**

**BIG PNEUMATIC DRIVE TIRES**... Flotation for heaviest loads

**SUPER TRACTION**... load over drive wheels

**POWER STEERING** on large pneumatic rear wheels

**SHUTTLE GEAR TRANSMISSION**... Control lever on steering column

**6 SPEEDS FORWARD — 6 REVERSE** for maximum efficiency

**EXTRA GROUND CLEARANCE**... for OUTDOOR maneuverability with heavy loads

**LIFTING CAPACITIES** up to 15,000 lbs.

**LIFTING HEIGHTS** to 24 Ft.

**ABOVE FEATURES STANDARD EQUIPMENT**

— PLUS Hour meter lights, ignition key starting, horn — **NO EXTRA COST!**

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**OTTAWA STEEL DIVISION**

L. A. Young Spring and Wire Corporation

50 Years of Progress — 1906-1956

OTTAWA, KANSAS

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## HIGHLIGHTS

*Continued*

for revolutionary changes predicted by reliable sources, he concluded, but many of these changes have already been made in material handling equipment.

\* \* \*

### "Automation" Not Enough

**I**NCREASED industrial production will not come solely from automation in the labor-short decade ahead, said Dr. W. R. G. Baker, a General Electric Co. Vice President, to the recent annual convention of the Standards Engineers Society.

Without increased standardization of industrial and engineering processes, he stated, automation will not achieve its full potential usefulness. He defined standardization as "in most instances, simplification."

The GE executive, who is also president of the Radio-Electronics-Television Manufacturers Association, said that the nation's industries must be willing to embrace change and invest more in productive equipment and methods to produce 40 percent more goods and services with only 14 percent more workers by 1966. "If automation is to be the salvation of our economy, then standardization is the handmaiden of automation," he believed.

There are a few but highly important areas where strong effort has been made to promote standardization in design, construction, nomenclature, safety and operational aspects of material handling equipment. Since handling principles now comprise the core of automation design, and will continue to be developed simultaneously with increased applications of automation, the need for more work on engineering standards for our industry is strongly indicated.

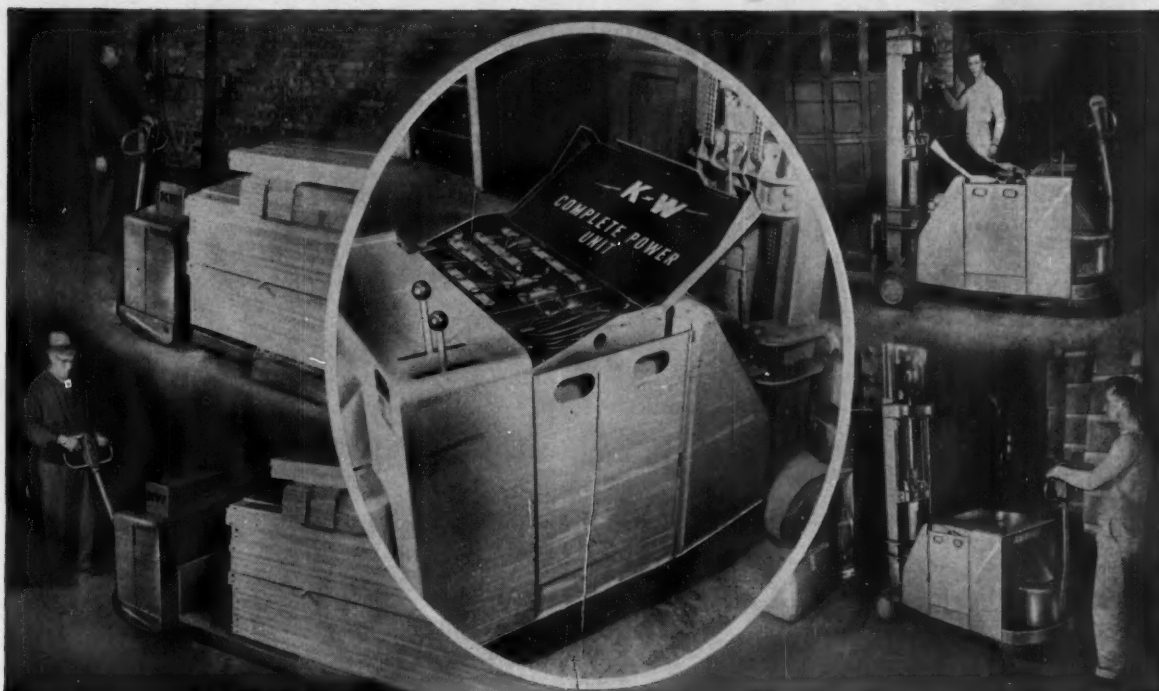
*Ed Leighton*

**Editor**

# **new K-W COMPLETE POWER UNIT**

## **Makes "Walkie" Trucks Right for You**

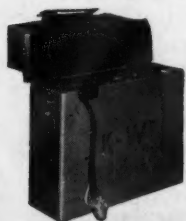
- Charge it anywhere
- Cuts maintenance time and cost
- No moving parts
- Save space—no special charging area needed



There's no need to tie up valuable floor space for battery charging when you use KW Complete Power Units on your "Walkie" type trucks. Simply plug unit (battery with permanently mounted charger) into any 110-120 V. 60 cycle outlet anywhere . . . at any time truck is not in operation . . . for a booster charge, or full charge . . . without removing battery from truck!

The KW Complete Power Unit is automatic and foolproof in operation. There are no moving parts, no relays, no contactors, no timers to set or get out of adjustment. This permits the KW Complete Power Unit to withstand severest service conditions.

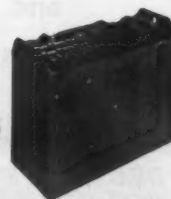
Rate of charge is automatically controlled, thus insuring positive protection to battery. Complete recharge overnight. Change now to KW Complete Power Units and see the difference!



**SPECIFY this NEW KW Complete Power Unit on your next truck**

**KW Batteries for all industrial applications**

*Write for descriptive literature*



# **K-W BATTERY COMPANY**

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DECEMBER 1956

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27



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# A STEP

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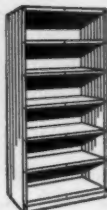
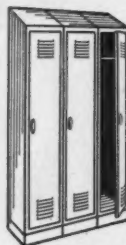
The customer who specifies Penco steel equipment has the assurance of highest-standard quality, skilled engineering and design . . . plus prompt service . . . which have built and maintained the reputation of Penco, a pioneer in sheet metal products for almost a century. For catalog, write Dept. F.

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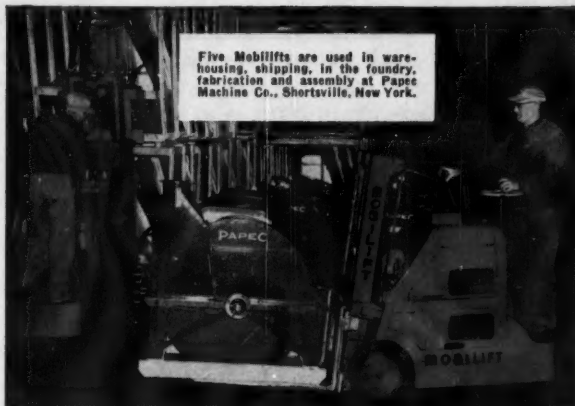
## ASSOCIATION and SOCIETY NEWS

• The Annual Meeting of the Caster and Floor Truck Manufacturers' Association was held in Cleveland recently. The three-day program included committee reports, addresses by prominent industry speakers, and the election of new officers. Newly elected president of CFTMA is W. J. Daugherty, of Firestone Industrial Products Co. Illustrated here, Daugherty (left), receives

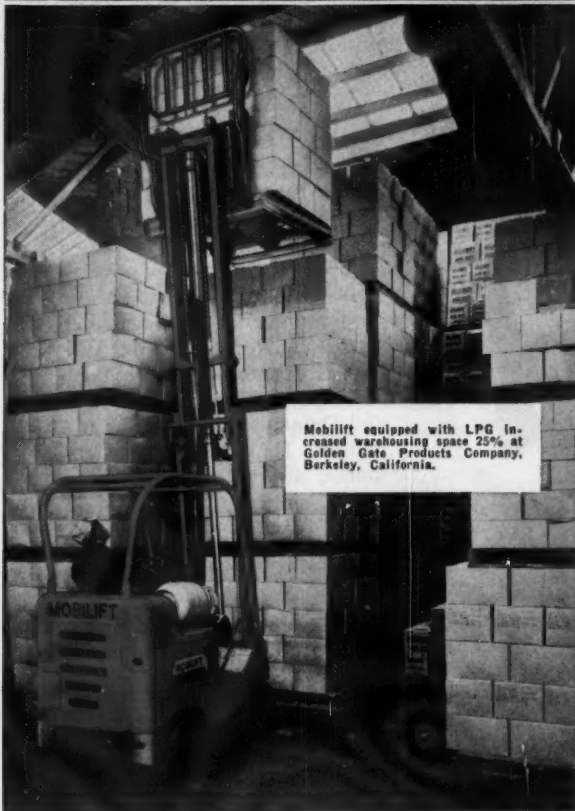


the president's gavel from Charles M. Mead, chairman of the nominating committee. Other officers of the group are H. A. Ford, vice president and O. T. Henkle, Jr., treasurer.

• The Fibre Box Association held its 1956 Annual Meeting in New York recently, and the group's activities included the election of officers and directors. Elected president of the association was Fred W. Oldenburg, of American Box Board Company. Philip F. Paul, of The Flintkote Co., was named vice president. Newly elected directors are D. H. Brewer, Container Corporation of America; R. M. Briggs, Menasha Wooden Ware Corp.; J. Gidwitz, Lanzit Corrugated Box Co.; R. M. Goldstein, Nivison-Weiskopf Co.; J. T. Harrison, Union Bag-Camp Paper Co.; P. A. Schilling, Waldorf



Five Mobilifts are used in warehousing, shipping, in the foundry, fabrication and assembly at Papee Machine Co., Shortsville, New York.



Mobilift equipped with LPG increased warehousing space 25% at Golden Gate Products Company, Berkeley, California.

IN ANY INDUSTRY,  
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**MOBILIFTS**  
LOWER  
OPERATING COSTS



Hydra-Lizer and other features cut handling time per car load of metal laths 88% at Park Ridge Fuel and Materials Co., Park Ridge, Illinois.



Two Mobilifts reduced car-loading time 90% at Aetna Waste Paper Co., Chicago, Illinois.

The case histories reported here are typical of many received from Mobilift® users across the country. They all report that Mobilift "Sit-Down" and "Stand-Up" Industrial Trucks help them cut handling costs by lowering operating and maintenance costs to a bare minimum . . . by moving more tonnage per hour per dollar.

Mobilift Trucks, with smooth Mobil-Matic® Drive and fluid coupling, fingertip controls for non-fatiguing operation, high free lift at no extra cost, and exclusive Hydra-Lizer®, a hydraulic equalizing rear suspension system on "Sit-Downs," all add up to higher profit jobs. Mobilifts are available with factory-installed LPG

equipment, and attachments for specialized operations. "Stand-Up" models up to 3500 lbs. capacities; "Sit-Down" models up to 5000 lbs. capacities.

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- Mobilift "Sit-Down" Folder on how Mobilift's exclusive features save dollars by increasing efficiency.
- Mobilift "Stand-Up" Folder describing the cost-saving features of the only "Stand-Up" gas-operated truck on the market.



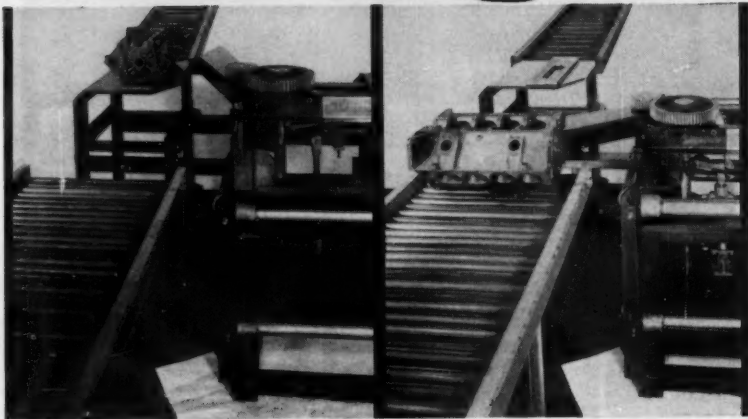
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\* ANOTHER JOB-TAILORED APPLICATION  
OF **BUSCHMAN** STANDARDIZED CONVEYORS  
AND ENGINEERED TRANSFER EQUIPMENT



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## ASSOCIATIONS

*Continued*

Paper Products Co.; and F. E. Smyser, Ottawa River Paper Co.

• The American Material Handling Society, Inc. has announced that five new chapters have joined the organization. The new members of AMHS are Seattle, Washington; Jacksonville, Florida; Dayton, Ohio; Memphis, Tennessee; and Columbus, Ohio.

• The National Institute of Packaging, Handling and Logistics Engineers held its first meeting in Washington, D. C. recently. The newly formed group is dedicated to government-industry cooperation, and its first meeting was attended by 92 charter members. William E. Haines, Deputy Assistant Administrator, Business and Defense Services Administration, Department of Commerce, addressed the meeting on the subject of industrial defense planning against nuclear attack.

• The Packaging Advisory Committee of the National Security Industrial Association presented a report on the current status of MIL-P-116c at its fall meeting held in Washington, D. C. recently.

• The initial meeting of the Volatile Inhibitor Manufacturers Association was held in Chicago recently. A constitution and by-laws were adopted, and officers and directors were elected. President of the new group is John M. LeBolt, Cromwell Paper Company. E. S. French, Orchard Paper Co. was named vice president, and Samuel T. Lawton, Jr. becomes treasurer and administrative officer. Elected as directors were Fred Hutchins, E. S. French, John M. LeBolt, E. D. Cookson, and Douglas Brown.

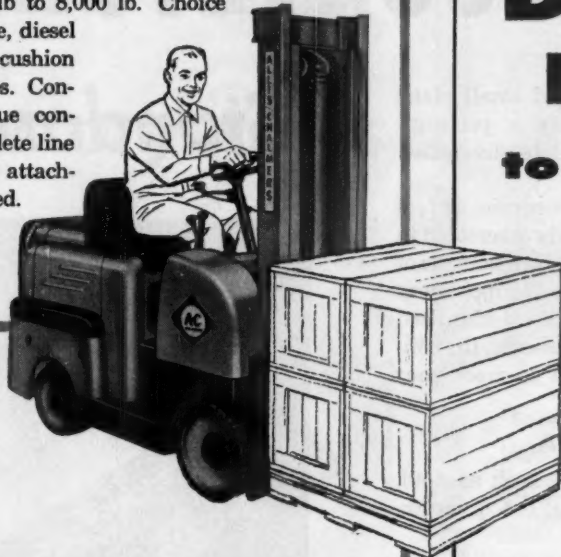
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**CHORE BOY Platform Trucks** — 2,000 and 3,500-lb capacities. Ideal for shuttle and inter-department delivery, pickup and package distribution, other handling. Large deck holds a variety of material. Is suitable for carrying personnel or for mounting welder, air compressor, other equipment.

CHORE BOY is an Allis-Chalmers trademark.



**SHOP MULE Industrial Tractors** — thirty gasoline and diesel models with drawbar pulls up to 12,000 lb. Compact, highly maneuverable, these tractors are designed for towing or pushing wheeled vehicles, moving heavy machinery — are also used for maintenance work and operating auxiliary equipment.



See these examples of  
*Allis-Chalmers*  
**Engineering in Action**  
... in action against handling  
and maintenance costs.

MATERIAL HANDLING DEPARTMENT  
BUDA DIVISION, MILWAUKEE 1, WISCONSIN



**ALLIS-CHALMERS**

# HERE'S Diversified Handling to meet your needs

Whether you want to lift material, carry it or pull it, here is Allis-Chalmers equipment to do the job with real savings in time and money. Each unit is suited to a specific type of handling. Each is built "from the drawing board up" to deliver top performance.

Ask your Allis-Chalmers Material Handling Dealer to show you how these machines will fit your particular handling requirements.

# NOW BUY CONVEYORS BY

Now, for the convenience of large and small plant operators alike—Hewitt-Robins offers a pre-engineered versatile conveyor for a widely diversified range of application.

Hewitt-Robins Sectional Conveyors consist of factory-built components that can be easily assembled in the field by your own personnel. A full complement of standard accessory items are available to supplement the basic conveyor units. By virtue of standardized design and interchangeability of components, the conveyor can be lengthened or relocated to meet your future needs.

## ENGINEERING DATA

**MATERIALS HANDLED:** Bulk materials such as sand, gravel, run-of-mine coal, coke, stone, ore, gypsum, grain, sugar beets and any other.

**CAPACITIES:** From 16 to 1,000 TPH a belt; speeds up to 650 feet per minute.

**SIZES:** *Standard widths* 18", 24", 30" or 36". *Lengths* C to C from 15' 6" up to any length consistent with good conveyor practice. . . *Inclines:* angles of inclination depending on types of material being conveyed.

**STANDARD HORSEPOWER:** From 2 to 40 hp.

**IDLERS:** For light and medium-duty service, less expensive Hewitt-Robins ball bearing 4" dia. troughing and return idlers may be used. For standard duty service, 5" dia. roller bearing troughing and return idlers are available with the Hewitt-Robins patented triple grease seal. All the above idlers are equipped with the convenient one-shot lubrication feature.

**BELTING:** Complete selection of all Hewitt-Robins standard stocked belts. Special belts available when necessary.

**INSTALLATION:** All standard components are clearly labelled and shipped with complete instructions, for quick, easy assembly by your own personnel.

For information about the Sectional Conveyor and other Hewitt-Robins bulk material handling products, contact the Hewitt-Robins office nearest you or write direct to Stamford, Conn., for Bulletin #132B.

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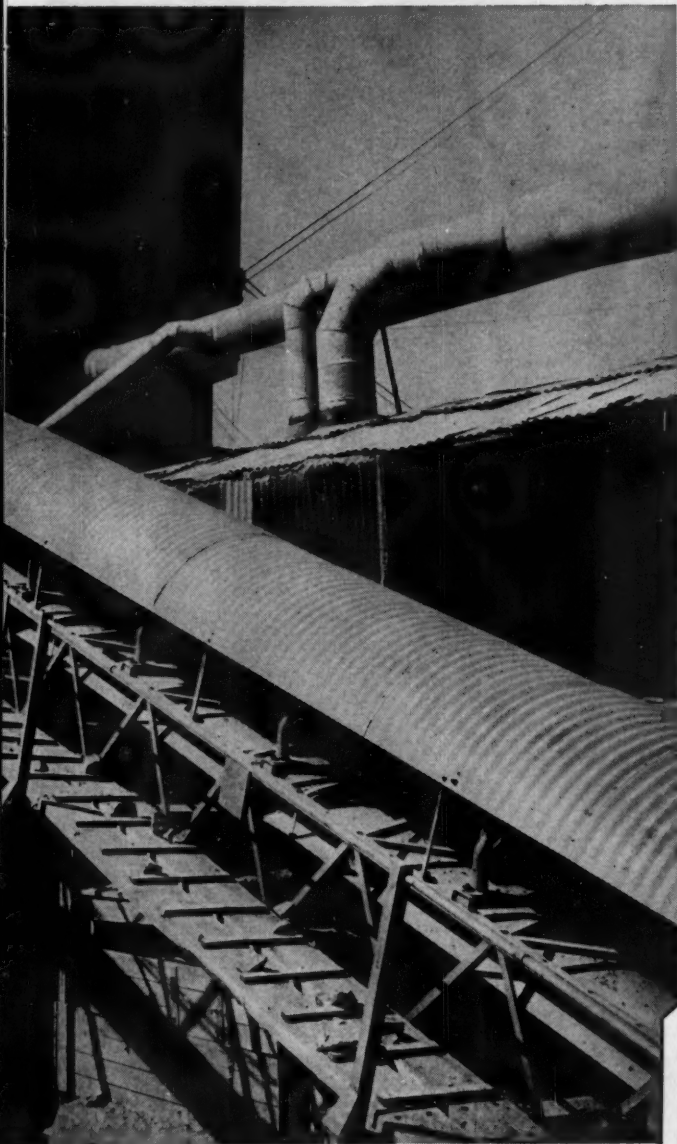


# HEWITT

FLOW

# THE SECTION

## Built Factory Units



# - ROBINS

### Industry Case History



#### Sectional Conveyor Solves Problem for Contractor

Unable to unload barges containing sand, stone and gravel because of a change in waterfront rights, Mr. Barney Turecamo of the B. Turecamo Contracting Company of Brooklyn, N. Y. was faced with a serious problem.

Mr. Turecamo realized that belt conveyors were the solution. He consulted with many conveyor people and then decided to use Hewitt-Robins Sectional Conveyors to match the physical limitation of his dock and to convey 225 short tons of material per hour.

Now aggregates flow in a steady stream from barges to storage bins. A 133' inclined conveyor carries the material from a dockside hopper to a remote-control swivel chute atop the primary silo. Here, it can be fed into any of three compartments in the silo or onto a 326' transfer conveyor with traveling tripper that supplies nine additional storage silos.

So successful has the system proved, Mr. Turecamo, the owner, recently installed another Hewitt-Robins Sectional Conveyor with Hewitt-Robins Maltese Cross Fiberglass belt. This conveyor spans a roadway and carries hot aggregates at temperatures as high as 350°. The conveyor eliminated trucks that were previously used. Mr. Turecamo advises that this trouble-free conveyor has resulted in savings in both time and money.

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Here's a "natural" for any product requiring dependable power *plus* the means of automatically increasing *work ability* throughout the engine's speed range.

It's the Chrysler "power twins"—Chrysler Industrial Engine and Chrysler Industrial Torque Converter. Together, they make a lightweight, compact package offering high torque multiplication—up to 260% greater torque than you may be getting now—plus easy installation and trouble-free operation. Torque Converter features include dual cooling (liquid and direct air), and an optional built-in-housing output shaft governor control.

Chrysler Industrial Torque Converter is assembled with the Chrysler Industrial Engine of the manufacturer's choice. The combination may be ordered Chrysler-equipped for use with direct drive, transmission or power takeoff. Manufacturers may also specify high or low inertia flywheel—whichever best meets their requirements.

Check this power combination—Chrysler Industrial Engine (230 to 331 cubic inch displacement, in-line 6 or V-8), plus Chrysler Industrial Torque Converter. For more details see a Chrysler Industrial Engine Dealer, or write: *Dept. 14F, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.*



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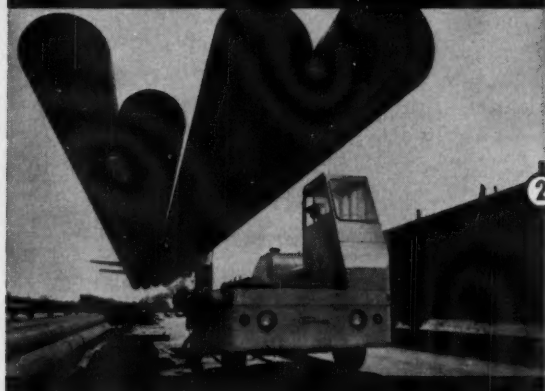
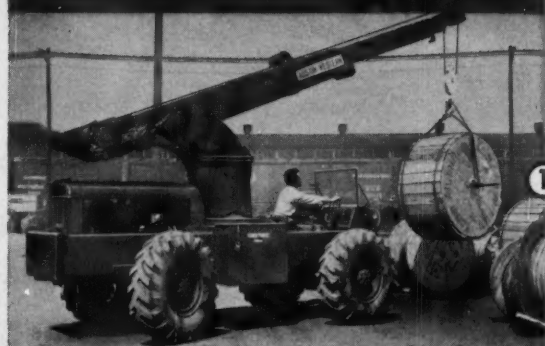


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②

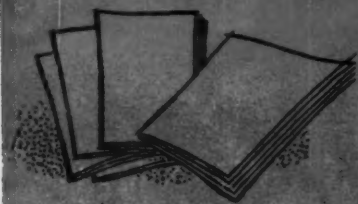
**BAKER-RAULANG TRAVELOADER**

Vickers Hydraulics provides power steering and multiple movements that enable Traveloader to quickly reach out sideways and pick up a long load, place it on the vehicle's deck for traveling, and then stack it up to 12' high.

③

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**Truck Casters and Wheels** . . . are described in a 68-page, 2-color catalog offered by Bond Foundry & Machine Co. It has a section on simplified caster selection that eliminates guesswork ordering.

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**20% Saving in Fastening Time** . . . is the report of one user of air driven staplers manufactured by Bostitch, Inc. Other features are a neater, cleaner package and more space left free for advertising and stenciling on container. Full information is available.

Circle 19 on Reader Service Card

**Diversified Handling Equipment** . . . fork trucks, platform trucks and industrial tractors are described in literature available from Allis-Chalmers Mfg. Co., Buda Div.

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**Conveyors** . . . to carry your production from the initial processing stage right through to the shipping department are described in data available from Union Steel Products Co. These conveyors deliver a steady flow of products or materials smoothly, quietly, wherever you need them.

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**Twice the Wear** . . . of ordinary industrial truck tires is the claim made by the Industrial Tire Dept., U. S. Rubber Co. for their new dual compound construction tires. Meets all demands of power steering and automatic transmissions. A manual is available from the company.

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**Getting Shipments out Faster** . . . by using stencils which can be integrated with any paperwork procedure is the claim made by Weber Marking Systems. Full details are available from the company.

Circle 148 on Reader Service Card

**\$35,000 Annual Savings** . . . in packaging is reported by one user of Stanley Steel Strapping. The savings was made possible through lower shipping costs through lighter packages made possible by elimination of wooden crates—minimized breakage and reduced damage claims through better product protection. Full information is available from Stanley Steel Strapping, Div. of The Stanley Works.

Circle 128 on Reader Service Card

**Automatic Strapping** . . . of packages does not require an operator. Details are offered by Signode Steel Strapping Co.

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**Steel Shelving, Lockers and Cabinets** . . . for offices, factories, shops, laboratories, warehouses, etc. are described in a catalog available from Penco Metal Products Div., Alan Wood Steel Co.

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**Hydraulic Hand Pallet Truck** . . . is lightweight to lessen operator fatigue and is easy to maneuver and pull. Convenient foot pedals lift and lower the load. Aluminum alloy construction—one-piece welded steel frame. A bulletin is available from The Raymond Corp.

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advertisements in this publication

**Dock Covers . . .** which give protection against cold and loss of heat between cars and building doorways in unloading operations are described in literature available from CAPCO.

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**Industrial Packing Paper . . .** for low cost protection to your product while in transit is the subject of a booklet published by American Sisalkraft Corp. This material protects shipments from dirt and weather, insures better moisture control and will stand up under the punishments of high speed, open trucking and also outdoor storage.

Circle 7 on Reader Service Card

**Spiral Conveyors . . .** for handling bulk materials or liquids is the subject of literature available from Canton Stoker Corp. Mechanically handles materials from grain size to lump and liquids such as alcohols, acids, dyes, glue, oil milk, molasses, etc.

Circle 26 on Reader Service Card

**Hoist Trolleys . . .** designed for easy handling on straight or curved monorail systems is the subject of a bulletin offered by Anchor Steel & Conveyor Co.

Circle 8 on Reader Service Card

**Tying Wire . . .** of round steel strapping is available with galvanized finish—colors for identification and comes in 25 pound self-dispensing cartons or 50, 100 and 150 pound coils. Information and prices are offered by Inland Wire Products Co.

Circle 73 on Reader Service Card

**Fume Elimination . . .** Oxy-Catalyst exhaust systems provide an effective way to good fume elimination from your plant. Operating by catalytic reaction, they eliminate 95% or more of the dangerous carbon monoxide—90% of the irritating hydrocarbons—from the exhaust gases of lift trucks, etc. Complete information is offered you by Oxy-Catalyst, Inc.

Circle 111 on Reader Service Card

**Certified Job Studies . . .** covering the use of the company's fork lift trucks by a brick manufacturer, cotton warehouse, transfer company, fruit grower and metals plant are yours on request from Towmotor Corp.

Circle 138 on Reader Service Card

**Hand Pumps . . .** which help prevent spilling, slopping, overfilling, and dripping are described in a bulletin available from Tokheim Corp. Operate on both forward and backward strokes and deliver 20 gallons per 100 strokes. Available with hose or spout outlets.

Circle 137 on Reader Service Card

**Magnesium Dock Boards . . .** are light, strong and safe. They can safely handle loads up to 20,000 pounds, protect men and equipment against accidents and costly damage. Further information is available from Magline Inc.

Circle 89 on Reader Service Card

**Lane Marking Tapes . . .** that roll onto the floor are perfectly dry and ready for traffic the minute they're applied. Tape sticks at a touch to any clean, dry

surface. Last up to two years and are unaffected by acids, greases, salts and most commercial solvents. Available in eight colors. Free folder is yours for the asking from Minnesota Mining & Mfg. Co.

Circle 99 on Reader Service Card

**Wire Rope Electric Hoists . . .** in capacities from 1/2 to 5 tons is the subject of literature offered you by Chisholm-Moore Hoist Div., Columbus McKinnon Corp. These hoists are designed for continuous duty, are compact, feature balanced design and push button control.

Circle 29 on Reader Service Card

**Cost-Cutter Conveyors . . .** available in 22 models. Aluminum or steel—electric or gas—lengths 4' to 40' and belt widths from 12" to 24". A bulletin describing the conveyors is available from London Engineering Co.

Circle 105 on Reader Service Card

**Air Hoists . . .** which give accurate control from swift lift or slow set—which cannot burn from overloading or stalling—are light weight are described in a bulletin offered you by Gardner Denver Co., Keller Tool Div.

Circle 58 on Reader Service Card

**Steel Strapping and Unloading . . .** are the subjects of new catalogs available from Acme Steel Products Div., Acme Steel Co. The ideas in these two books are available from adaptation application to your particular packing and shipping operation.

Circle 1 on Reader Service Card

Use This

## READER SERVICE CARD

to obtain information on any item in this issue

New Equipment & Supplies ..... Starting on Page 155

Useful Literature ..... Starting on page 139

to two years and  
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**Electric Hoists**  
from 1/2 to 5 tons  
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McKinnon Chain  
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**Conveyors . . .**  
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3	28	53	78	103	128	153	178	203	228	253	278	303	328	353	378	403	428	453	478
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5	30	55	80	105	130	155	180	205	230	255	280	305	330	355	380	405	430	455	480
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22	47	72	97	122	147	172	197	222	247	272	297	322	347	372	397	422	447	472	497
23	48	73	98	123	148	173	198	223	248	273	298	323	348	373	398	423	448	473	498
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### BUSINESS REPLY CARD

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CLEVELAND 15, OHIO

FIRST CLASS  
PERMIT No. 8066  
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CLEVELAND, OHIO



**Gripper Slings . . .** made of woven wire with unique, spiral loop construction that gives maximum flexibility and strength with minimum chance of load damage. Available in standard lengths, widths and pretested capacities up to 100,000 pounds. A catalog is yours for the asking from The Cambridge Wire Cloth Co.

Circle 25 on Reader Service Card

**Job-Tested Casters and Wheels . . .** are described in a 192 page booklet offered you by Darnell Corp., Ltd. These casters have such features as oil, water and chemical resistant treads, are rust-proofed by zinc plating and have string guards to insure easy rolling at all times.

Circle 38 on Reader Service Card

**An 80% Reduction in Time . . .** for loading and unloading operations is said to be possible with the Wilkie Co. telescopic conveyors. They expand to a full 40 feet or contract to, only 10 feet. Complete information and a scale model demonstration are offered.

Circle 150 on Reader Service Card

**Side Loading Fork Truck . . .** picks up long, awkward loads from the side and carries them securely and speedily to near or distant points—without changing travel direction. Handles pipe, lumber, loads weighing over 4000 pounds and any awkward loads. A bulletin giving full information is available from The Baker Raulang Co.

Circle 11 on Reader Service Card

**Do-it-Yourself Shelving . . .** a free idea book which demonstrates the versatility of DEXION and which will give you clues to its many uses for shelving, framing, etc. is being offered by the Dexton Div., Acme Steel Co.

Circle 2 on Reader Service Card

**Case Studies in Modern Lifting . . .** is the title of a booklet offered you by Globe Hoist Co. It tells what other firms in your industry are doing to speed lifting work and cut costs. This lift allows you to cut costs in truck loading, eliminate the hazards of ramps, route traffic across recessed railroad tracks, etc.

Circle 64 on Reader Service Card

**Pre-Engineered Rack Designs . . .** 1800 different types are available. As your storage area expands, these racks can be rebuilt to accommodate larger areas. No jackknifing or side-sway. A booklet showing these rack designs is yours for the asking from Mult-A-Frame Div., Ainsworth Mfg. Corp.

Circle 102 on Reader Service Card

**Hydraulic Lift Gates . . .** for  $\frac{3}{4}$  ton and larger trucks and semi-trailers are the subject of literature available from Anthony Co. These units are said to speed deliveries, develop faster ways of loading and unloading, systematize handling of bulky shipments, prevent damage and help drivers.

Circle 9 on Reader Service Card

**Portable Bag Closer . . .** weighs only 10½ pounds, requires no installation—plugs into any outlet,—handles textile and paper bags—simple to operate and maintain and is claimed to be the lowest priced bag closer on the market. Detailed literature is available to you from Dave Fischbein Co.

Circle 55 on Reader Service Card

**Engine Hour Meters . . .** let you know when it's time to change oil, replace filters, lubricate, overhaul, etc. They take the guesswork out of protective maintenance. Details are available from John W. Hobbs Corp.

Circle 69 on Reader Service Card

**Expendable Pallets . . .** one ton capacity. Are said to save up to \$1 and more per pallet load shipped. Weigh only four pounds—no repair or maintenance necessary—eliminates return shipping costs, inventory control and book-keeping systems. Further information is available from Titan Pallet Co., Inc.

Circle 136 on Reader Service Card

**Worm Drive Hoists . . .** which offer such features as simplified design—longer life with fewer moving parts; greater safety factor because of increased braking ability of worm drive and noise-free operation are described in literature available from Electrolift, Inc.

Circle 47 on Reader Service Card

**Platform Lift . . .** for lifting loads up to 20,000 pounds from loading dock to floor of truck, whether truck is above or below dock. The Load-O-Matic is said to drastically cut loading time, eliminate spilling and prevent accidents. A bulletin giving details is offered you by Field Engineering Products Co.

Circle 54 on Reader Service Card

**Magnesium . . .** as a material for extrusions, material handling equipment, etc. is the subject of data available from The Dow Chemical Co. The company also offers complete facilities for design, engineering and production of magnesium extrusions.

Circle 44 on Reader Service Card

**Process Belts . . .** of woven and flat wire designs in bright or galvanized steel—corrosion resistant stainless and chrome nickel alloys for high temperature are fully described and illustrated in a catalog from Ashworth Bros., Inc.

Circle 10 on Reader Service Card

# New Yale Electric Trucks



Compact Yale sit-down truck maneuvers easily in narrow aisle... speeds stacking operations.

**The shortest 3,000-4,000 lb. capacity sit-down electric trucks—engineered to incorporate big-truck features—for fast narrow-aisle operations.**

## **High Maneuverability**

Short overall length (only 68 $\frac{3}{4}$ " from front face of forks) allows the operator to maneuver quickly and easily for stacking from a 9' 10" aisle. Accurate inching control permits extra fast positioning of truck through a simple press-and-release operation of the brake pedal with the truck in first speed.

## **Truck and Operator Efficiency**

The new K51W series includes Yale's exclusive, patented Magnetic Cam-O-Tactor for smooth, automatic acceleration. Hydraulic brakes and a 110 sq. inch braking surface give the driver reliable stopping power. "Dead Man" control automatically shuts off power and applies brakes when operator leaves the truck. Dual caster wheels make steering effortless.

## **Greater Visibility**

The compactness of this truck plus the lowered cowl give the operator greater visibility for sure, fast travel and maneuverability without sacrifice of operator safety.

## **Adequate Power**

A high-capacity battery (720 Amp/Hr) gives the Yale K51W extra power for fast lifting (up to 50 feet/min.) and high travel speeds (up to 6 $\frac{1}{2}$  MPH). Side thrust rollers on both carriage and channels eliminate waste of power, reduce stress, keep lifting and lowering action smooth. Yale controller and motor connections cut use of current in lower speeds 20%...lengthens battery life.

For more detailed information send for Bulletin #5150 on the new 3,000 and 4,000 lb. Cap. Yale K51W series. Write The Yale & Towne Mfg. Company, Materials Handling Division, Philadelphia 15, Pa., Dept. 412.

# **YALE\***

**INDUSTRIAL LIFT TRUCKS AND HOISTS**

\*REG. U. S. PAT. OFF.

Gas, Electric & LP-Gas Industrial Lift Trucks • Worksavers • Warehouse • Hand Trucks • Hand and Electric Hoists  
Circle No. 152 on Reader Service Card for more information

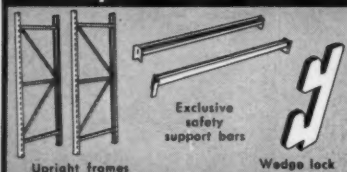
DECEMBER 1956

**BAUER & BLACK**  
Division of The Kendall Co., Chicago

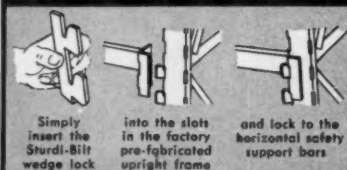
*"Our Sturdi-Bilt Adjustable  
STORAGE RACKS\*  
will pay for themselves  
in only 15 months!"*



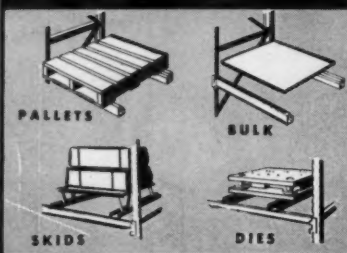
### Only 3 Basic Parts



WITH EXCLUSIVE  
**Float Wedge Construction**



**Instantly Interchangeable for**



### THE SECRET

#### Patented "Float Wedge Construction!"

Bauer & Black chose Sturdi-Bilt Adjustable Storage Racks because of their unusual flexibility, quick installation and instantaneous adjustability—WITHOUT TOOLS, BOLTS, NUTS, ERECTION WELDING OR SPECIAL LABOR!

Sturdi-Bilt's unique assembly principle—"FLOAT WEDGE CONSTRUCTION"—provided operating advantages *possible no other way*—INSTANT RESPACING, REARRANGEMENT, EXPANSION AND RELOCATION—AT ANY TIME—NO TOOLS—NO PARTS LOSS!

#### A 33 1/3% SPACE SAVING!

In one section of the warehouse alone, 12,000 sq. ft. of storage was condensed to 8,000 sq. ft. with The Sturdi-Bilt Racks.

#### LESS HANDLING!

Pallets are now handled individually, permitting complete merchandise selectivity and stock rotation. This, plus the simple adjustability of the pallet opening heights and widths and top loading, make *all space* usable, easily accessible storage space. This is why Bauer & Black is expanding the use of Sturdi-Bilt Adjustable Storage Racks—What other system can return its *full cost* in *space and labor saving* in so short a time?

#### WRITE FOR DETAILS

Let us prove how this new time-saving, money-saving, work-saving storage system can benefit your company too!

\*U.S. Patent No. 2760650  
Other patents pending



**Sturdi-Bilt**

**ENGINEERING COMPANY**

2501 Peterson Ave., Chicago 45, Illinois

Dept.  
F-12

Circle No. 131 on Reader Service Card for more information

### CATALOGS

*Continued*

**How to Lower Production Costs . . .** through the use of Cyclone Processing Belts is the subject of a booklet offered by Cyclone Fence Dept., American Steel & Wire Div., U. S. Steel Corp. It tells how these belts can do much toward lowering costs by eliminating needless manual operations and time-consuming hand-processing methods.

Circle 37 on Reader Service Card

**260% Greater Torque . . .** when your equipment is powered with Chrysler industrial engine and torque converter is the claim made by the Industrial Engine Div., Chrysler Corp. in their latest booklet. The torque converter features include dual cooling (liquid and direct air), and an optional built-into-housing output shaft governor control.

Circle 30 on Reader Service Card

**Storage Racks . . .** that stack, cut time and handling costs, protect workers and stock and speed inventory are described in a catalog offered you by Equipment Mfg., Inc. These racks are made of strong, welded tubular steel and are adjustable to fit any space or unit load—special racks designed to your specifications are also available.

Circle 50 on Reader Service Card

**Industrial Truck Batteries . . .** which allow the power tubes to expand without shedding thus assuring long life are detailed in a bulletin available from Exide Industrial Div., The Electric Storage Battery Co.

Circle 46 on Reader Service Card

**Low Headroom Trolley Crane . . .** overcomes headroom limitations without lowering runways, using standard units, as described in literature available from Euclid Crane & Hoist Co.

Circle 51 on Reader Service Card



# GREAT NEW IDEA in tractors and attachments



**M-H-F**

## WORK BULLS

Now from one source . . . a package of 5 versatile, low-cost tractors with 20 power-matching attachments

Measure your profit problem against the bright, new versatility of M-H-F Work Bulls. Never before so much pay-off workability at such low cost!

Tough manhandling projects become a breeze with a Work Bull—34 to 52 hp—digging, dozing, lifting, loading, hauling, mowing, handling scores of jobs on all projects.

And when the job is too small for a large machine, it's just right for a Work Bull. Attachments quick-change in 5 to 15 minutes with no special gear.

Maintenance costs little, too — Work Bulls are built to "construction standards" . . . always ready for rugged duty. And when you think of maintenance, remember this. You'll be dealing with a single retail distributor for sales and service on both tractors and attachments. One source, one responsibility — a definite advantage for you.

Write today for your retail distributor's name and free, 24-page illustrated catalog.



52 hp

Work Bull Model 404 with 3/4-yd. loader and hydraulic-controlled back hoe works and travels on or off the hard surface. Gasoline or diesel engines.



42 hp

Model 303 with angle dozer and back hoe. Hoe buckets available in 5 sizes — 12 to 36 in. Mounting or dismounting of any attachment takes only 5 to 15 minutes. Gas or diesel engines.



34 hp

Model 202 with grader makes an ideal utility and cleanup tool . . . frees big rigs for more profitable assignments. Features dual range 6-speed transmission . . . high speed reverse.

### FORK LIFT

Model 202 works on or off hard surface. With standard 10-ft mast, it handles loads to 4000 lbs. With optional triple mast extension, shown, it lifts lighter loads to 21 ft.



Work Bulls pay off as primary equipment . . . as backup machines . . . as utility or cleanup tools

## M-H-F WORK BULLS

Division of Massey-Harris-Ferguson, Inc.

23-L Quality Avenue

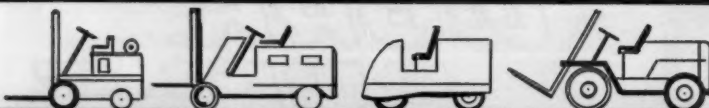
Racine, Wisconsin



**WOULD \$1<sup>80</sup> FUEL SAVINGS**



(per truck per day) **INTEREST YOU?**



then you should know about

**CENTURY**  
carburetors



with  
metering  
valve  
controlled  
combustion

**Faster Starting • Perfect  
Idling • Fuel Economy**

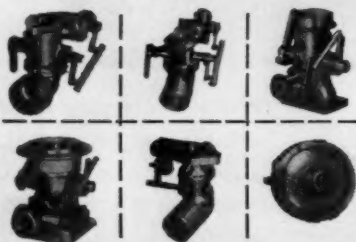
**YOU SAVE MORE** than just fuel costs when you convert to LP-Gas and Century Carburetion—actually you save on oil and on engine maintenance, too.

Years ahead Century Carburetors have the extra control of a metering valve to guarantee perfect fuel-air mixtures for instant starting, perfect idling and full power. Century Carburetors are not adaptations; they are individually designed for each make and model of engine—are calibrated and pre-set to its performance curve.

Write for information about Century Carburetors and the new Model H Converter built especially for fork lifts and industrial trucks.

**CENTURY GAS EQUIPMENT CO., PARAMOUNT, CALIFORNIA**

**A CENTURY FOR EVERY MAKE AND MODEL**



**ENGINEERED  
for each engine  
CALIBRATED  
to each engine**

**PRE-SET  
to its performance curve  
EASY TO INSTALL**

Circle No. 28 on Reader Service Card for more information

## CATALOGS

*Continued*

**Walkie-Type Trucks . . .** which offer such features as electric-hydraulic lift, simple controls, ball bearings turntable, double wheel support and others are described in a catalog available from The Moto-Truc Co.

Circle 101 on Reader Service Card

**Prefabricated Aluminum Conveyors . . .** for dairy and chemical industries. Clean and sparkling inside and out. Easily cleaned. Smooth as silk—no-slip chain pull—variable speeds. Bulletin 300 offered by Mercury Industries, Inc., Conveyor Div.

Circle 96 on Reader Service Card

**Tractor and Attachments . . .** now from one source you can have five versatile, low-cost tractors with twenty power-matching attachments. May be used for digging, dozing, lifting, loading, hauling, mowing, etc. Attachments change in five to fifteen minutes with no special gear. A 24-page illustrated catalog is yours for the asking from Work Bulls Div., Massey-Harris-Ferguson, Inc.

Circle 87 on Reader Service Card

**Magnesium Pallet Dollies . . .** for moving loads in or out of trucks and rail cars with cost-saving speed and efficiency. Easily carried by one man. Strong welded magnesium channel construction. Fourteen standard models and sizes available. Further information may be had from Magline Inc.

Circle 155 on Reader Service Card

**Power Units for Walkies . . .** this unit, a battery with permanently mounted charger, plugs into any 110-120 V. 60 cycle outlet anywhere at any time truck is not in operation for a booster or full charge—without removing the battery from the truck. No moving parts, no relays, no contactors, no timers to set or get out of adjustment. Full details are available from K-W Battery Co.

Circle 79 on Reader Service Card



G-E base station located in superintendent's office dispatches orders, controls fleets of Douglas material handling units. Vehicles handle 2 times as many jobs as before.



Request for new assignment! Douglas G-E radio equipped tractor is in constant contact with supervisors and other vehicles. Speaker on dash overrides factory noise.



## RADIO-EQUIPPED MATERIALS HANDLING VEHICLES COVER TWICE AS MANY JOBS

### Douglas Aircraft Finds G-E 2-Way Radio Cuts Time Between Jobs, Coordinates Facilities, And Saves Money

A profitable materials handling operation depends upon efficient control, and maximum use of all equipment. General Electric 2-way radio helps the Douglas Aircraft Company do this—and saves them money.

#### RADIO COORDINATES OPERATION

This world-famous builder of military and civilian aircraft has radio on handling vehicles in its Santa Monica plant. Radio-equipped fork trucks, cranes, and tractors on the job at Douglas are in constant contact with dispatcher, and each other. Wherever a vehicle is working—in a remote building, at a loading dock outdoors, anywhere, in this 147 acre plant—the operator is under supervision, can get new orders instantly.

#### SURVEY PROVES RADIO ECONOMY

In one study of radio efficiency on

crane type units alone, Douglas management found that radio had reduced travel distance per job tremendously. Previously, up to 60% deadhead travel had been the case—with radio, these vehicles may handle 2 times as many jobs. On this basis, G-E radio can pay for itself in record time.

#### G-E LOW POWER SYSTEM

The base station transmitter is located in the transportation supervisor's office. Mobile two-way radios are on vehicles equipped with large speakers to over-ride high factory noise levels. G-E industrial radio may be operated from any of the five DC voltage systems used by handling vehicles. Mobile units perform on either 6 or 12 volt power supplies—

converters are used for 24, 32, and 64 volt trucks. Units operating inside steel buildings and in the open prove the effectiveness of the Low Power radio at Douglas.



#### INVESTIGATE G-E RADIO

A G-E Communications Counselor can show you the outstanding versatility, sturdy construction, low maintenance features of G-E Industrial Radio. Call him in, or write today to: General Electric Company, Communication Equipment, Section X32126, Electronics Park, Syracuse, New York.

*Progress Is Our Most Important Product*

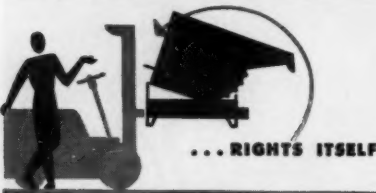
**GENERAL  ELECTRIC**

Circle No. 61 on Reader Service Card for more information

DECEMBER, 1956

43





## Unload 2 tons with 1 hand

It's easy with a Roura Self-Dumping Hopper. Simple, one-man operation does it with amazing speed . . . cuts cost of hand unloading by at least 50%. That's why hundreds of leading industries have found it the safe, sensible, economical way to handle wet or dry, hot or cold bulky materials.

It fits securely on any standard fork or platform lift truck . . . turns it into an efficient, semi-automatic dump truck. And, remember . . . Roura makes 'em rugged . . . extra heavy gauge welded construction . . . to withstand years of toughest treatment. They're available in sizes from  $\frac{1}{4}$  to 2 cubic yards.

Let Roura help you cut costs.

## ROURA Self-Dumping HOPPER

### WANT DETAILS?

Clip this coupon . . . attach it to your letter-head . . . sign your name . . . and mail to . . .

**ROURA IRON WORKS, INC.**  
1411 Woodland Ave., Detroit 11, Michigan

Circle 121 on Reader Service Card

44

## CATALOGS

Continued

**Cushioning Material . . .** for safe shipments and economical packaging are discussed in literature available from Vanant Co., Inc. Exclusive vertical-horizontal suspension safeguards your product both in and out of its shipping carton.

Circle 145 on Reader Service Card

**Tractor Shovel . . .** the new HD-6G tractor shovel changes from a bulk loader to a lift fork, crane, bulldozer or ditcher. The change takes two men less than 15 minutes. Changing from one attachment to another enables you to handle packaged and palletized loads, move heavy machinery, level yard storage areas, dig trenches for pipe and foundation footings, etc. Full details are available from Allis-Chalmers Mfg. Co.

Circle 4 on Reader Service Card

**Electric Industrial Trucks . . .** low lift platforms and high lift platform trucks, fork truck and mobile cranes—available in over 100 different sizes and capacities are all described in a new general catalog on the complete line offered by The Elwell-Parker Electric Co.

Circle 48 on Reader Service Card

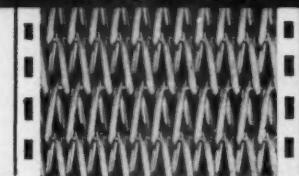
**Tape Dispensers . . .** the Derby 32-T gummed tape dispenser has an easily removed snap-out blade and is designed to dispense Kraft and reinforced tapes for the shipping room and production line. A seven day free trial is made by Derby Sealers, Inc.

Circle 40 on Reader Service Card

**Blue Book of Packaging . . .** is the title of a 36-page booklet on packaging which includes photographs, descriptions, facts and figures on all U. S. S. Gerrard steel strapping and associated equipment. It's yours for the asking from Gerrard Steel Strapping Division, U. S. Steel Corp.

Circle 63 on Reader Service Card

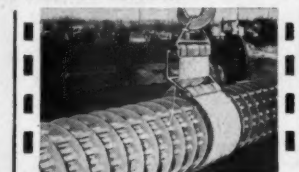
## GRIPPER SLINGS Star Performer for any lifting job



Made of **WOVEN WIRE** with unique, spiral loop construction that gives maximum flexibility and strength with minimum chance of load damage.



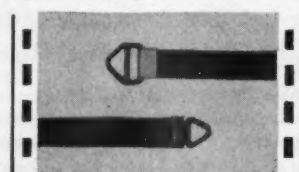
Broad, flat bearing surface gives greater load stability. All-metal construction resists wear and corrosion.



Used in **BASKET HITCH** for maximum strength or **CHOKE HITCH** for maximum gripping power.



For lifting light or heavy loads. Conforms to any size or shape.



**AVAILABLE** in standard lengths, widths and **PRETESTED** capacities up to 100,000 lbs. —special sizes on request. See your materials handling or mill supply distributor for a demonstration. OR, write direct for free catalog and name of nearest distributor.



## The Cambridge Wire Cloth Co.

Dept. W • Cambridge 12, Md.

WIRE CLOTH	WOVEN WIRE CONVEYOR BELTS	WIRE CLOTH FABRICATIONS
---------------	---------------------------------	-------------------------------

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

DEALERS: ask about open territory data

Circle 25 on Reader Service Card  
**FLOW**

# Industrial

## GANTRY'S CUT HANDLING COSTS



Dependable Industrial Gantry in use at U.S. Air Force Base employed for unloading jet engines and other heavy equipment from railroad cars and trucks. Elimination of high fixed runways removes hazard to low-flying aircraft.

**Industrial** Gantry's furnish all the "lift" you need to unload flatcars, gondolas and trucks with speed, safety and economy.

**Industrial** Gantry's are ideal where travel is long and where fixed overhead runways are undesirable. Gantry's are often the lowest cost crane installation where extremely long runways are necessary as in yard storage.

**Industrial** Gantry's are frequently used in ware-

houses and other industrial buildings where the supporting structure is not sufficiently rugged to permit the operation of a heavy duty overhead crane.

**Industrial** Gantry's are ruggedly-built, dependable, smooth-operating cranes — often the economical answer to many materials handling problems. Consult with Industrial for the most practical answers to your materials handling problems.

Designers and Builders of Overhead Cranes, Jib Cranes, Gantry's and Monorail Systems.



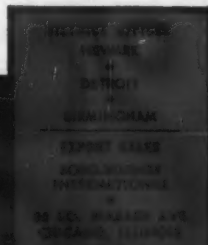
### INDUSTRIAL CRANE & HOIST

Ingersoll PRODUCTS DIVISION

BORG-WARNER CORPORATION

1531 SOUTH PAULINA STREET • CHICAGO 8, ILLINOIS

IG 1156-C



## CATALOGS

*Continued*

**Filling Machine . . .** available in 1 to 4-tube models; packs powdery and granular materials alike at high speeds, with accurate weights, into smaller, cleaner bags. Fills up to 20 bags a minute and is dust-free in operation. An illustrated booklet is available from St. Regis Paper Co.

Circle 123 on Reader Service Card

**Bins . . .** the right combination for your production, storage or handling problems will be found in the latest brochure published by Bathey Mfg. Co.

Circle 14 on Reader Service Card

**Aluminum Trucks . . .** made for special jobs and sold as standard equipment are discussed in a data file showing the dozens of types and hundreds of sizes available. Their lightweight aluminum construction completely eliminated cumbersome dead weight.

They start, stop and steer quicker and easier. The data file is offered by Magnesium Co. of America, Tobey Aluminum Div.

Circle 91 on Reader Service Card

**Railway Car Door Opener . . .** can be operated by just one man. Adaptable to all types of box cars—long chain for long cars. Literature is available from The Nolan Co.

Circle 106 on Reader Service Card

**Small Parts Drawers . . .** with dividers to adjust the size and number of compartments. Labelholders for quick identification. Both shallow and deep drawers—all interchangeable. Full details are available from Equipito Div. of Aurora Equipment Co.

Circle 49 on Reader Service Card

**Saves \$7500 Annually . . .** with a Raymond platform tiering truck. That's the report of one user of these Raymond trucks. A free users' report showing dollar-and-space savings achieved by various firms is yours for the asking from The Raymond Corp.

Circle 116 on Reader Service Card

**Self-Dumping Hopper . . .** enables you to unload two tons of material with one hand. Is said to cut cost of hand unloading by at least 50%. Handles wet or dry, hot or cold bulky materials. Details are available from Roura Iron Works, Inc.

Circle 121 on Reader Service Card

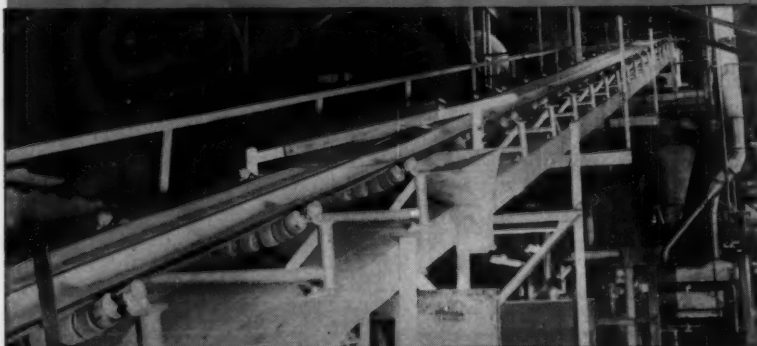
**Dock Covers . . .** protect workers doing loading and unloading during inclement weather. Also protects merchandise. Eliminates accidents and loss of traction due to wet and slippery conditions. Full information is available from Dazzo Products Co.

Circle 39 on Reader Service Card

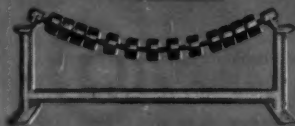
**Industrial Trucks and Trailers . . .** which feature 4-wheel steering and are claimed to be America's finest are described in data from Jakes Foundry Co.

Circle 77 on Reader Service Card

## FORD Foundry uses JOY LIMBEROLLER Belt Conveyor Idlers



*Joy Limberollers at work on a belt conveyor at Ford's Cleveland Foundry.*



This radical, new idler is used in handling abrasive foundry sands at Ford's Cleveland Foundry. Each idler is a single roller consisting of a series of pressure-molded neoprene or rubber discs on a flexible steel cable. Only two bearings are used and these are up out of the dirt zone.

Joy's new belt conveyor idler has already given over *twelve times* the service life of conventional idlers in handling many difficult materials . . . abrasive foundry sands, coal, petroleum coke, potash, copper ores, mill tailings, iron ore, wet concrete, triple super-phosphate, ammonium sulphate and sticky fertilizers.

The Limberoller is unaffected by most corrosives that damage steel . . . is ideal for chemical, sulphur and salt plants.

Get details from **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.** In Canada: **Joy Manufacturing Company (Canada) Limited, Galt, Ontario.**



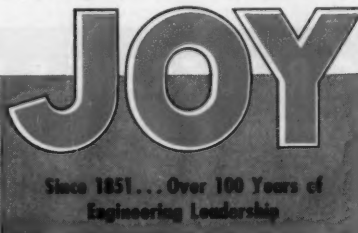
Write for **FREE** Bulletin 137-42

*Consult a Joy Engineer*

For Air and Gas Compressors, Vacuum Pumps and Boosters, Conveyors, Fans, Electrical Connectors

WBW L-6359-137

Circle No. 78 on Reader Service Card for more information





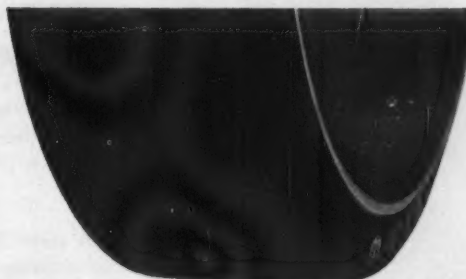
**NEW!  
DIFFERENT!  
BETTER!**

# U.S. ROYAL INDUSTRIAL TRUCK TIRE

gives **TWICE** the **WEAR** at **NO EXTRA COST!**



You don't pay a penny more for this new dual-compound U. S. Royal. Yet it wears up to twice as long as ordinary tires. In addition, this new U. S. Royal tire reduces power consumption—increases stability for greater safety on high lift trucks—meets all demands of power steering and automatic transmissions.



**Greatest Cushioning Ever!**

**U. S. ROYAL INNACUSH**

the original cushion solid

Absorbs from 2 to 4½ times as much shock as competitive cushion tires...guards loads, trucks, drivers from impact and vibration...cuts your maintenance costs.

**NEW—COMPLETE—FREE! WRITE TODAY!**

Mr. J. C. Richardson  
Industrial Tire Dept., U. S. Rubber  
Rockefeller Center, New York 20, N. Y.

Please rush me your new, authoritative manual on industrial tires.

NAME.....

ADDRESS.....

CITY & STATE.....



**SPECIFY U. S ROYAL AND SAVE!**

## United States Rubber

Circle No. 144 on Reader Service Card for more information

DECEMBER 1956

47

**FAB-WELD MOVES  
TO LARGER PLANT**

The Fab-Weld Corporation has recently moved its offices and manufacturing facilities to a new location at Lackawanna County, Pa., according to George Hanhauser, president. The new plant is over eight times the size of the former facilities in Philadelphia, Hanhauser said. He pointed out that this was the only answer to the unprecedented increase in sales volume of Fab-Weld material handling equipment, and reflected the firm's policy to keep up with Industry's advancing trends and needs.

**GERRARD WILL  
PRODUCE IN SOUTH**

Construction of a new plant for the production of steel strapping, seals, cotton bale ties and other industrial packaging equipment has been started at Leeds, Alabama by A. J. Gerrard & Company. The new modern plant, which is scheduled to begin production in January, 1957, is located in a 2½ acre site near the Birmingham suburb. According to company officials, the expansion was brought about by growing demands of business, and the development of special products to solve the strapping products of southern industries.

**BEGINS INDUSTRY  
EDUCATION SERVICE**

The Fibre Box Association has begun an educational service designed to acquaint college students with the opportunities available among the nation's fibre box plants, and emphasizing the importance of their products to industry. Copies of a booklet, "The Dynamic Fibre Box Industry," have been sent to placement directors of all leading universities, as well as professors of transportation, marketing and distribution, and packaging. The association also offers qualified industry speakers and visits for students to box plants.

**NEW GREER  
EXPANSION**

A new Research and Development Division has been established by Greer Hydraulics, Inc. Staffed entirely by engineers, the new division will be located at the company's main plant adjacent to New York International Airport, Jamaica, N. Y. Its primary function, according to company spokesmen, is to provide the firm with advanced engineering concepts leading to new or improved products, with particular emphasis on designs and prototypes for jet airliner airframes, engines, missiles, etc. on a system basis. The R&D Division will be headed by Jules Kendall, vice president in charge of research and development.

**MAINTENANCE SHOW  
INCLUDES  
CONFERENCE**

The eighth National Plant Maintenance and Engineering Conference, to be held in conjunction with the annual Plant Maintenance and Engineering Show in Cleveland on January 28 to 31, will consist of small meeting groups to permit intimate discussions of factory products. The conference, the largest industrial gathering of its kind in the country, attracts over 2500 engineers each year, and is expected to set a record in attendance this year. Theme for the show and conference this year is "Good Maintenance or Bad—The Difference is Profit."

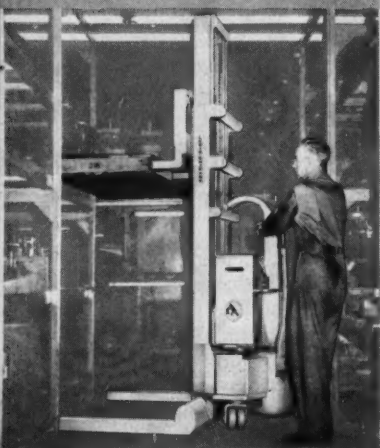




**1** **AISLE COMPRESSOR**—Platform Type JackStacker. Operates in 69" aisles (48" long x 40" wide loads). Capacities to 6000 lbs. Lift heights to 150".



**2** **NARROW-AISLE WALKIE** — Open-Faced Pallet Type JackStacker. Operates in 69" aisles (48" x 40" long loads). Capacities to 6000 lbs. Lift heights to 125".



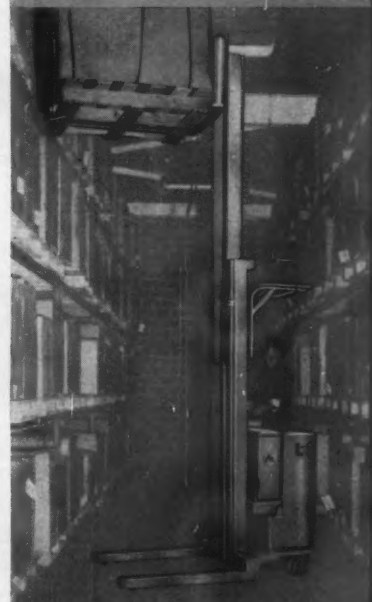
**3** **HIGH STACKER** — Straddle Type JackStacker. Operates in 72" aisles (48" long x 40" wide loads). Capacities to 6000 lbs. Lift heights to over 200".



**4** **AISLE ECONOMIZER** — Riding Type Hydrafork. Operates in 82½" aisles (48" long x 40" wide loads). Capacities to 3000 lbs. Lift heights to 172".



**5** **SPACE MASTER** — Model "MN". Operates in 75" aisles (48" long x 40" wide loads). Capacities to 3000 lbs. Lift heights to 158".



**6** **COMPACT ANGLER** — Model "M". Operates in 77" aisles (48" long x 40" wide loads). Capacities to 4000 lbs. Lift heights to over 200".

## 6 ways to narrow aisles... expand your storage or production areas

*Each of the space-saving, money-saving Lewis-Shepard Electric Trucks shown here can operate easily in 7-foot aisles, or less*

Want to put unused storage space to use? Let the rugged, smooth-operating Lewis-Shepard electrics illustrated here help you. Differing in detail, nevertheless they all have *one thing* in common . . . aisle-saving compactness. By reducing existing aisles, Lewis-Shepard equipment has created thousands of extra cubic feet of storage area without laying a brick.

Beside compact construction, other practical advantages common to L-S trucks include . . . lifetime lubrication, which ends forever the need for greasing; roller masts, eliminating friction wear; gear drive, which means no chains to break — no clutch to wear; magnetic controls, to provide instant speed selection and braking.

Lewis-Shepard, manufacturer of the most complete line of industrial trucks, anywhere, offers you power-tiering equipment in either rider, or walkie types — each a leader in its special field. For catalogs on trucks shown here, mail coupon.



**LEWIS-SHEPARD**

*The Master Line*

1312 Walnut Street, Watertown 72, Mass.

ADDRESS

Use coupon below for further information on Narrow-Aisle LEWIS-SHEPARD Trucks

Send me catalogs on L-S Narrow-Aisle Trucks.

NAME

COMPANY

Modernized System was planned from box to hopper to conveyer to facilitate smooth flow.



**OPEN HOUSE MARKS  
NEW BALDWIN PLANT**

A new division of Baldwin-Lima-Hamilton Corporation, and the new \$3 million plant built to house it, were introduced at an open house held by the firm recently. The new division is the Electronics and Instrumentation Division, and its operations are centered in the new plant at Waltham, Mass. The division will concentrate on testing and control equipment and devices for automatic processing and automation. The new plant is the first to be built in the firm's Waltham Research and Development Park.

**WAYNE EXPANDS  
TO CANADA**

Organization of a Canadian company to manufacture and sell the complete line of Wayne power sweepers in that country has been announced by Wayne Manufacturing Company. The new corporation, Wayne-Crothers, Ltd., Toronto, is licensed to manufacture both Wayne street and industrial sweepers. First production is scheduled for January, 1957. Distribution will be handled by Wayne's present Canadian sales organization.

**BLAKESLEE  
CHANGES NAME**

Vac-U-Lift Company is the new name for the Blakeslee Manufacturing Company. The firm is the manufacturer of the Vac-U-Lift, an induced vacuum device for lifting odd-shaped materials in connection with overhead cranes, hoists and lift trucks. The company also has announced its association with Hufford Machine Works, Inc., of which it has become a division.

**FORT WORTH STEEL  
TO EXPAND**

Fort Worth Steel & Machinery Company has announced the purchase of 12½ acres of land adjoining its present plant, bringing the company's total site to 30 acres. The new land will permit the construction of 400,000 square feet of manufacturing space and a new office building, all on one level. Along with this expansion, the company is planning the development of new products outside its present industrial field.

**KENDALL LAUNCHES  
NEW PLANT**

The Kendall Company has begun construction of its new plant for the production of Polyken industrial tapes, plastic film and plastic specialties. The new plant, in Franklin, Kentucky, will be of two-story design, and its 35,000 square feet will triple the firm's productive capacity for these products.

**OWENS-ILLINOIS  
ANNOUNCES MERGER**

Merger of Owens-Illinois Glass Company and National Container Corporation has been announced. Owens-Illinois is the surviving company. Under the new arrangement, Samuel Kipnis, former president and director of National Container, becomes a member of the board of directors of Owens-Illinois.

**BEGINS WEST COAST  
OPERATION**

American Hoist and Derrick Company has expanded its operations to the West Coast. A totally owned new corporation, American Hoist Pacific Company, has been formed, with headquarters in Seattle, Wash. It will primarily produce special custom-engineered heavy material handling equipment that is not normally offered by American Hoist. Special emphasis will be placed on extra high capacity lifting devices employed in the testing of nuclear weapons.

Modernized System was planned from box to hopper to conveyer to facilitate smooth flow.

# Powell Dump-Hoppers Slash Handling Costs -

"Tighter controls on production and costs—positive control in process inventory—speed up of manufacturing cycles—better customer service and reduction in floor space requirements"—that's the story reported from a leading fastener and small parts manufacturer upon modernizing their handling system. Utilizing **Powell Tapered Nose End Dump-Hoppers**, parts now flow smoothly through production with an absolute minimum of manual labor, and a real reduction in handling costs. From the first operation, these products are transported from station to station in the hoppers, working in conjunction with large receiving bins that gravity feed into machines or, finally, into shipping containers. If you're looking for the right unit to meet specific handling requirements, check first with Powell—originator and leading producer of cold-formed, all-steel materials handling equipment.

**The POWELL PRESSED STEEL CO.**

HUBBARD, OHIO

Dept. 2126



At most stations the Powell Dump Hoppers are used as work boxes. The tapered nose makes access easy—special racks at various work stations tilt boxes forward, keeping work at operators' finger tips.

Working inventory is made easy. Dump Hoppers, when stacked, actually become stock bins, easy to work from and see into for product identification.

Standard lift trucks with special tilting devices and finger lifts are used to handle these versatile Dump Hoppers.

10023

*What's in a name?*


**MATHEWS**



Chain conveyor handling cylinder liners for tractor engines.

**This one is on some of the  
outstanding conveying systems in  
the Metalworking Industries**

Mathews' Engineers have been designing and building gravity and power conveyers and special conveying machinery for over fifty years, and a great amount of this equipment has been applied in metalworking plants. Mathews' Engineers know the handling problems of the metal producers and fabricators. That's why so many people in these industries have an extra measure of confidence in Mathews equipment—and why you see Mathews Conveyers in metalworking plants everywhere.



**MATHEWS CONVEYER COMPANY**

GENERAL OFFICES . . . ELLWOOD CITY, PENNSYLVANIA

PACIFIC COAST DIV. MATHEWS CONVEYER COMPANY WEST COAST  
SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . . . MATHEWS CONVEYER COMPANY, LTD.  
PORT HOPE, ONTARIO

Engineering Offices or Sales Agencies in Principal American and Canadian Cities.  
Export Representative—Foreign Trade Division of New York Hanseatic Corp.

Circle No. 95 on Reader Service Card for more information

**CALENDAR  
OF  
EVENTS**

**December 10-13**

3rd Annual National Retail Lumber  
Dealers Exposition  
International Amphitheatre  
Chicago, Illinois

**January 15-17**

Caster and Floor Truck Manu-  
facturers' Association Meeting  
Hotel New Weston  
New York, N. Y.

**January 27-29**

10th Semi-Annual Meeting—National  
Wooden Pallet Manufacturers Assn.  
Hollywood Beach Hotel  
Hollywood, Florida

**January 28-31**

Plant Maintenance & Engineering  
Show  
Cleveland Public Auditorium  
Cleveland, Ohio

**February 16-19**

Golden Anniversary Exhibit—Can-  
ning Machinery and Supplies Asso-  
ciation  
Conrad Hilton Hotel  
Chicago, Illinois

**March 16-18**

Annual Meeting, Folding Paper Box  
Association of America  
Drake Hotel  
Chicago, Illinois

**April 9-11**

Caster and Floor Truck Manu-  
facturers Association Meeting  
The LaSalle Hotel  
Chicago, Illinois



All right, you guys! . . .  
Where's the fire?



# THE NEW HYSTER 20 GETS MORE WORK DONE PER DAY THAN ANY OTHER 2000-LB CAPACITY PNEUMATIC



**Briefly**, here is why you should look further into the Hyster 20. Like all Hyster Lift Trucks, the 20 is designed by men who have had long experience in the manufacture of materials handling machinery, aided by Henry Dreyfuss, noted industrial designer. The result is a truck with an *unusual capacity* to get more work done per day.

**Operator can better see** what he is doing and can maneuver in greater confidence *inside*, and *outside*, under all operating conditions, and in closest quarters.

**Less time is spent in servicing and repair** because the Hyster 20 is *designed* for more time on the job. We can't possibly begin to tell you all you should know about this truck—but call your Hyster Dealer. He will give you the entire story. If you move materials of any sort, you owe it to yourself to look into the very definite advantages of using the new Hyster 20 Lift Truck, or any of the other Hyster Industrial Trucks 1,000 to 30,000 lbs. capacity.

## HYSTER 20 Model QC

Available with Mcnomast Upright and L-P Gas operation

Call your Hyster Dealer today. He is listed in your telephone directory under "Trucks-Industrial"



**HYSTER**  
COMPANY



2931 N. E. Clackamas, Portland 8, Oregon  
1031 Myers Street, Danville, Illinois  
Hyster N. V., Nijmegen, The Netherlands  
Peoria, Illinois; Nijmegen, The Netherlands

Circle No. 71 on Reader Service Card for more information

# MEN

*in the*

# NEWS

At United States Steel Corporation . . . Roy E. Pinniger has been promoted to assistant to the president of the American Steel and Wire Division, according to Walter F. Munford, president of the division. Pinniger has been vice president



R. E. Pinniger



J. E. Brown

and general manager of the Cyclone Fence Department for the past 20 years. He is succeeded in that post by James E. Brown, formerly general superintendent of the company's Waukegan, Illinois plant. With his retirement scheduled for August, 1957, Pinniger will have the opportunity to train his successor.

At the University of Utah . . . a research project of Flow of Bulk Solids is being conducted by Andrew Jenike, material handling consultant of Salt Lake City. This project is sponsored by the Minerals Beneficiation Division of AIME, and is financed in part by a \$5000 grant by the Engineering Foundation. The Utah Engineering Experiment Station is providing personnel, facilities and a substantial sum of money.

At Eaton Manufacturing Company . . .

John C. Virden, a director of the company for the last ten years and a member of its executive committee since 1950, has been elected president, effective January 1, 1957. Virden is chairman of the board of directors of the Federal Reserve Bank of Cleveland and Federal Reserve Agent for the Fourth Federal Reserve District. He is also



J. C. Virden

chairman of the board of the John C. Virden Company, and a director of the Cleveland Electric Illuminating Company, Diamond Alkali Company, the Goodyear Tire & Rubber Company, Interlake Iron Corporation and Youngstown Steel Door Company.

At The Thew Shovel Company . . . Warren B. Weston has been named managing director of Thew's overseas subsidiary, Lorain (Holland) N. V., according to C. B. Smythe, president. Weston has formerly been director of overseas operations for the firm. He and his family have taken up residence in The Hague, where the company's operations are located.

At The Frank G. Hough Co. . . . the board of directors elected Frank G. Hough, founder and president of the company, to the newly created office of chairman of the board at a special meeting recently. G. A. Gilbertson, formerly executive vice president and general manager, was elected president and chief operation officer of the firm, which is a subsidiary of International Harvester Company. The company is the manufacturer of the Payloader line of tractor shovels.



F. G. Hough

At The Hamilton Caster & Manufacturing Company . . . the appointment of Robert L. Lippert as project engineer has been announced. Lippert had formerly served Hamilton as a special consultant, and is the author of a comprehensive technical paper on the engineering characteristics of industrial wheels. He was previously active in research and development of nuclear weapons for the Ordnance Department.

At Whiting Corporation . . . Stephens H. Hammond has been re-elected chairman of the board, the company announces. Other directors who were re-elected to the board are Thomas L. Hammond, J. A. Handley, John B. Dunbar, Freder-



### SIMPLE CONTROLS

Convenient to operate — easy to service.

### BRAKE

Exclusive design puts it on the wheel where it belongs.

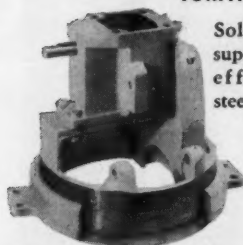


### ELECTRIC-HYDRAULIC LIFT

Integral pump and motor. Exposed oil lines are eliminated to prevent leakage.



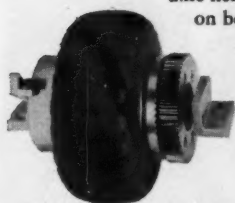
### BALL BEARINGS TURNTABLE



Solid load support plus effortless steering.

### DOUBLE WHEEL SUPPORT

No cantilever loading—axle held rigidly on both sides.



### ACCESSIBLE CONTROL PANEL and MAIN POWER CUT-OFF



No complicated circuits — easy to service. For safety — Main power is cut off when steer handle is vertical.

### GET ALL THE FACTS!

Write for either or both of these new catalogs: 56-R "Ride-A-Man" or 56-W "Walkie" Models



## MOTO-TRUCS

Your **BEST** protection against down-time!

Simple . . . rugged construction keeps **MOTO-TRUCS on the job!**

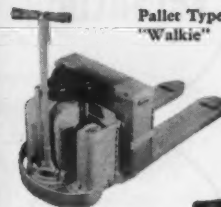
These nine important construction features — found on all Moto-Truc models — mean fewer breakdowns, and lower operating cost.

Moto-Trucs are tough and rugged. Maintenance is fast and easy, too! Vulnerable gadgets and frills that increase cost but add nothing to handling efficiency are eliminated.

Moto-Truc's sound engineering principals are your insurance of top materials handling performance. Always insist on Moto-Truc — there is a "walkie" or small riding model for every handling need.



Hi-Lift "Walkie"



Pallet Type "Walkie"



Platform "Walkie"



Grip-All Tractor

Largest exclusive manufacturers of "Walkies" and Ride-A-Man Trucks



## The MOTO-TRUC Co.

Representatives in Principal Cities

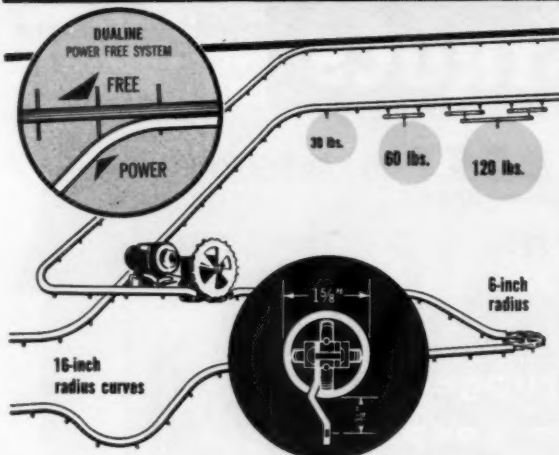
1955 E. 59th St. Cleveland 3, Ohio

Pallet . . . Platform . . . Hi-Lift Truck



**flexible**

CHAINVEYOR runs horizontally, straight up or down, and around standard curves of 16" radii. Parallel lines can be returned on 12" centers using new 6" sprocket. This unique capability solves your most complex conveyor problem.



**versatile**

Applicable to all types of industry for handling loads up to 60 pounds per foot.

Simple combinations of powered and free operations also provide intermediate handling and space-saving storage.

**low cost**

Efficient design does away with complicated, fast-wearing parts and facilitates economical installation. Complete enclosure protects against dirt and reduces upkeep.

"Modernize your materials handling without wasting valuable floor space! Investigate Chainveyor now. Call or write our experienced engineers regarding your own problems."



Circle 153 on Reader Service Card for more information  
56

## MEN IN THE NEWS

*Continued*

ick M. Gillies, Boyd N. Everett and J. Clyde Thomas. The firm also has announced the re-election of company officers. **J. A. Handley** continues as president, **M. J. Rice** is vice president in charge of engineering, **G. E. Seavoy** is vice president in charge of sales and **T. L. Hammond** is vice president. **J. Clyde Thomas** is treasurer and secretary, **F. O. Krumm** is controller and asst. secretary, **Robert S. Hammond** is vice president in charge of the Chicago office and **Dan Polderman, Jr.** is vice president in charge of export sales. In addition, **W. Hebble**, **W. A. Morey** and **N. C. Swigart** are newly appointed vice presidents in charge of operations, research and purchasing, respectively.

At **The Colson Corporation** . . . two new appointments in the engineering department have been announced by **Robert A. Pritzker**, president. **Frank P. Hayba**, formerly a Colson project engineer, has been named chief engineer for institutional products. **Frank J. Schenkelberger**, formerly with the Baker-Raulang Company, becomes Colson's chief engineer for industrial products.

At **Joy Manufacturing Co.** . . . **William Hanson Jr.**, formerly assistant manager of conveyor products, has been promoted at the New Philadelphia plant to manager of conveyor products. Hanson joined the firm in July 1951 as a designer, after having been a private engineering consultant.

At **Diamond Chain Company, Inc.** . . . **C. P. Cottlowski** has been elected president and general manager, succeeding **Guy A. Wainwright**, who became chairman of the board. Cottlowski has been with the company since 1916, and was previously assistant general manager. In other appointments, **H. N. Cottingham**, formerly vice president, was named assistant general manager. **G. E. Schoolt** was named vice president and director of personnel.

At **Richardson Scale Co.** . . . **Arthur J. Burke** and **William Hamilton** have been named vice presidents, according to a recent announcement by the company. Burke has been with Richardson for 20 years, serving as chief engineer since 1951. Hamilton has been with the firm over 25 years, and since 1953 has been Midwest regional manager, in charge of the Chicago, Cincinnati, Omaha, Wichita and Minneapolis offices.

(Continued on page 58)

FLOW

**speed material handling...  
cut maintenance costs  
with specially designed  
COLSON Quality CASTERS**

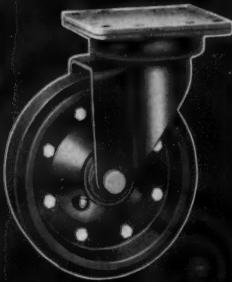
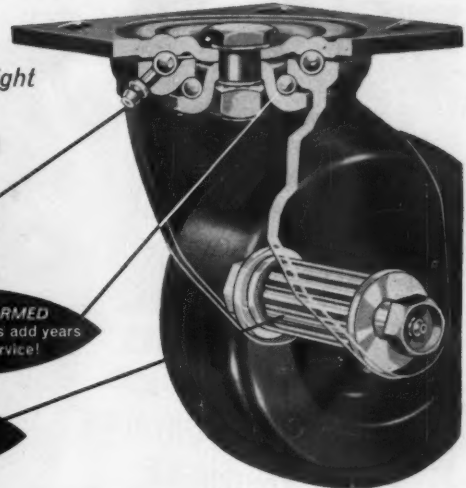
*a complete line to meet  
virtually every combination  
of floor conditions, weight  
and speed requirements!*

**PRECISION ENGINEERED!**

**ZERK TYPE** fitting for  
fast, easy lubrication!

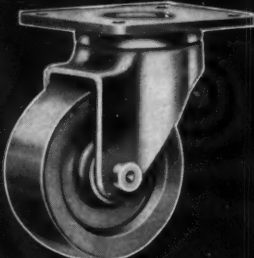
**ACCURATELY FORMED**  
and hardened raceways add years  
of trouble-free service!

**PRECISION BEARING**  
assembly for smooth,  
silent, easy rolling!



**No. 5 Series • EXTRA  
HEAVY DUTY STEEL  
CASTER (Rigid  
or Swivel)**

Practically indestructible,  
even under heavy shock  
loads. Perfect for power  
drawn trucks. Flexible  
spring surrounds thrust  
bearing to retain lubricant  
and keep out dust and dirt.  
Capacities from 1200 to  
1500 lbs. per caster.



**No. 3 Series  
MEDIUM DUTY  
CASTER (Metallic or  
Non-Metallic Wheels)**

Ball bearing swivel model  
with rubber tire wheel.  
Durable construction as-  
sures long life and easy  
operation under heavy  
loads. Capacities from 300  
to 400 lbs. per caster.

**No. 4 Series • PRESSWELD CASTER**

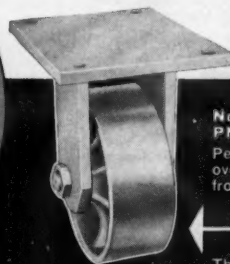
Unbelievably efficient, low cost, lightweight caster . . . ideal for  
dollies, racks, box trucks, etc. Unbreakable fork and top plate.  
Capacities to 800 lbs. per caster. Non-sparking phenolic resin  
tires highly resistant to industrial oils and acids.

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Rubber wheels. They'll save  
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See us at the Plant Maintenance and Engineer-  
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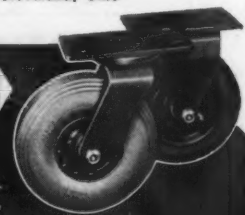


**No. 4 Series (Pneumatic)  
PNEUMATIC CASTERS**

Perfect for handling fragile products  
over rough, bumpy floors. Capacities  
from 220 to 340 lbs.

**No. 8 Series  
FORGEWELD SUPER  
DUTY CASTERS**

The world's finest caster for extra  
heavy duty requirements. Capacities  
from 700 to 6,000 lbs. per caster.



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# FUMES COST MONEY!

Don Witte, Seattle



Photo courtesy Stokely-Van Camp, Inc., Frozen Food Division

Noxious, foul-smelling exhaust fumes and odors need never be a problem in your plant again. For wherever you operate LP or gasoline-powered equipment indoors—even part time—Oxy-Catalyst Exhaust Systems provide an effective way—the *only* way—to good fume elimination.

Operating by catalytic reaction, the Oxy-Catalyst OCM eliminates 95% or more of the dangerous carbon monoxide—90% of the irritating hydrocarbons—from the exhaust gases of lift trucks, bulk handling trucks, stationary engines—any type of equipment run by gasoline or by LP gas.

You know how both gasoline and LP exhaust fumes can cause headaches, eye irritation, nausea and worse. These mean production slow-downs that cost you money. With the OCM, you can run your equipment *continuously, efficiently, safely*, without objectionable exhaust fumes, in even closely confined areas. And you get the full benefits of greater employee productivity and morale.

If you're interested in cutting costs by speeding production—if cleaner, safer air is important in your plant—write now for complete information on the OCM and name of your nearest supplier.

**For Diesel Exhaust Fumes** New OCM Dieseler reduces below objectionable levels harmful, irritating exhaust from any 4-cycle diesel engine when running at or over 60% load. Write for details.



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Inquirers in the U.S.A. or its territories, or in Canada, should write to Wayne, Pa. Inquirers elsewhere should write to Pan American Chemical Inc., 9 Rue La Perouse, Paris 16, France.

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## MEN IN THE NEWS

*Continued*

At The American Pulley Company . . . Nathaniel Warshaw has joined the company as manager of its newly acquired Material Handling Division, the company has announced. Warshaw was formerly with the Market Forge Company, and was responsible for the development of the Market Forge line of material handling equipment.

At Hewitt-Robins Incorporated . . . Wesley H. Raff has been appointed chief engineer of the company's Robins Engineers Division, succeeding Henry F. Dischinger, who has retired.

At American Sisalkraft Corporation . . . Robert N. Fisher has been named manager, commercial development. In his new post, Fisher will coordinate market research and commercial development activities of the company.

At Hyster Company . . . the appointment of John V. Pearson has been announced, for the position of supervisor of tractor equipment advertising and promotion. In making the announcement, Raymond L. Howerton, assistant manager of the company's sales promotion department, also revealed that Peter Lewis has been made responsible for the development of training programs and material for dealer salesmen.

At the Anthony Company . . . the election of Frank C. McManus as president of the company has been announced by Ben Kaplan, chairman of the board of directors. McManus succeeds Glenn A. Duis, who has resigned.





#### MAGIC EYE

(Photoelectric). Actuates door when beam is broken.

## STANLEY



#### PUSH PLATES

Wall-mounted push or kick plates. Adaptable to many industrial locations.

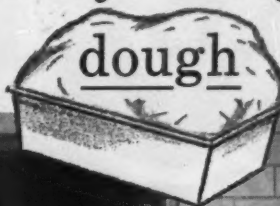


#### PULL CORD

Door is operated only with pull of overhead hand cord.



Wherever  
temperature or  
humidity changes  
cost dough



## *Magic Door Controls* are necessary

*It's dough* — literally — that is saved at the Drake Bakeries, Inc. plant in Brooklyn, N. Y. by the use of a Stanley Photoelectric Door Control between the dough-mix and fermentation rooms.

The Stanley Magic Eye Control (photoelectric) opens the doors automatically as the worker pushing dough container approaches, keeps them open only the minimum of time required to let the traffic pass through, then closes them promptly. Any change in temperature or humidity that could spoil the dough is prevented.

Keeping temperatures and humidity constant is only one Magic Door Control accomplishment. Time is saved by speeding traffic flow . . . money is saved by eliminating maintenance costs due to door damage.

Call in your nearby Magic Door Representative (listed in the yellow pages of the telephone directory). Write for descriptive literature.

**MAGIC DOOR DIVISION  
THE STANLEY WORKS  
DEPT. L, 592 LAKE STREET  
New Britain, Connecticut**

## STANLEY

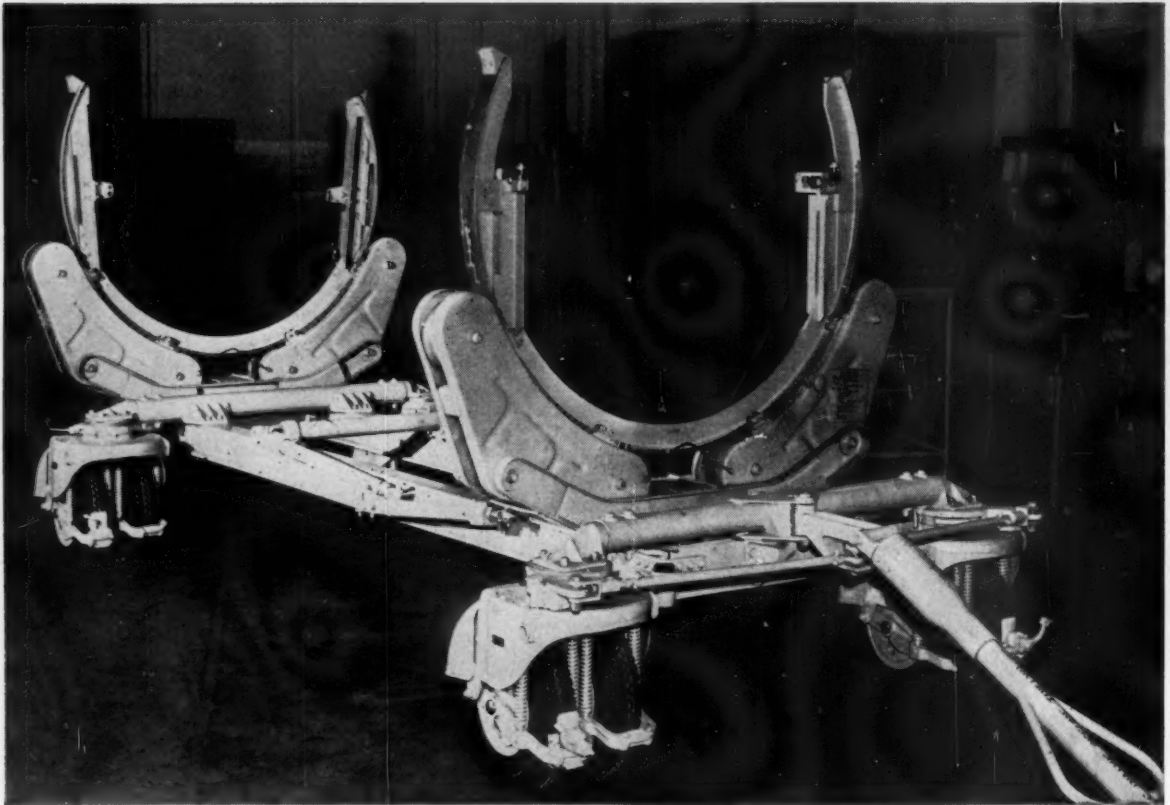
Representatives  
in Principal  
Cities



STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS • STANLEY STEEL STRAPPING • STANLEY STEEL

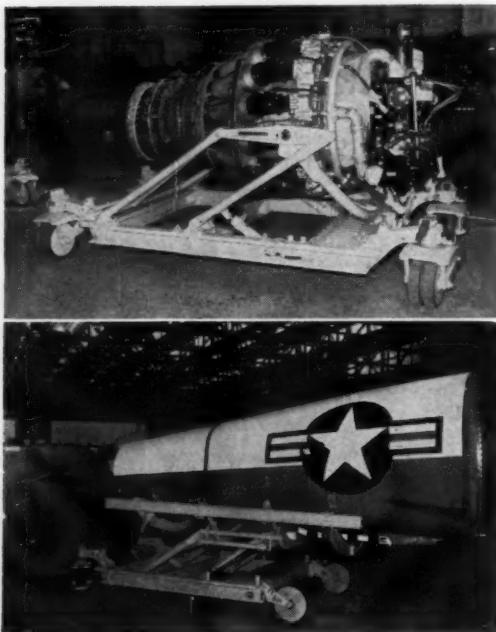
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DECEMBER 1956



THE COST OF HANDLING these special aircraft dollies is cut sharply by using lightweight, strong magnesium.

## Magnesium handles the big jobs, too!



**MAGNESIUM EXTRUSIONS** permit substantial weight reductions on huge dollies used for inter-plant handling of aircraft engines and body parts.

Specially designed equipment is needed to handle bulky, heavy aircraft engines and body components. This equipment must be strong and rigid enough to safely carry loads weighing tons, but light enough to be easily moved. That's why many structural members of these dollies are *extruded from magnesium*—the lightest of all structural metals.

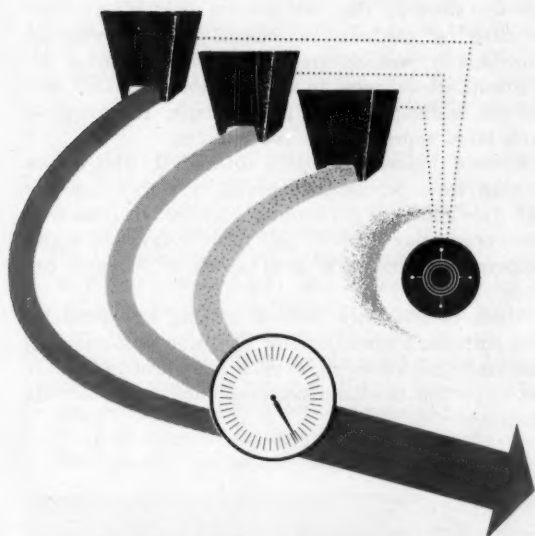
If you're buying materials handling equipment, make sure you're getting all the advantages magnesium can give you. If you're building your own, Dow offers complete facilities for design, engineering and production of magnesium extrusions. For more information, call the nearest Dow sales office or write THE DOW CHEMICAL COMPANY, Dept. MA368K-2 Midland, Michigan.

*you can depend on*  
**DOW MAGNESIUM**



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# SCALES FOR *Continuous* WEIGHING AND CONTROL



How "brains" in the form of scales are being built into systems to mechanize such operations as feeding, proportioning, batching, blending, counting and inspecting.

As need for close regulation of production processes has increased, the weighing scale has become a more essential component of mechanized systems. More frequently than ever before, the scale is being "built in" not only to record a quantity passing a given stage but also to govern the rate at which it passes. And many of these installations have been designed, of late, to do the job without need of human attention.

In other words, designers are including in the modern complex production system a "brain", or scale, which fully controls such automatic operations as feeding, counting, and batching. Both dry and liquid bulk materials as well as discrete units are automatically weighed. Quantities may be as little as 0.01 ounce or as much as 100 tons and up. Weighing controls may be built into conveyors of almost all types, traveling cranes, monorails, docks or railroad beds. Various types of instruments automatically provide temporary or permanent records, according to a company's needs. Memory systems and repeat cycles are often provided.

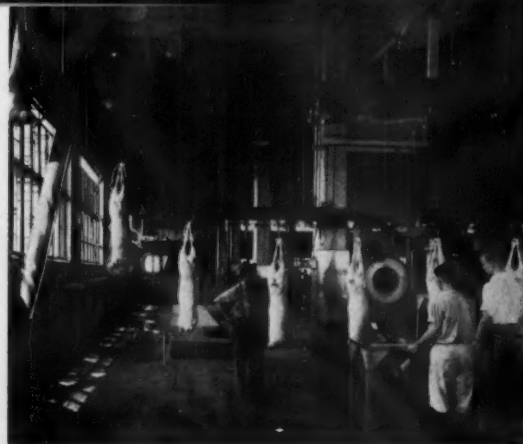
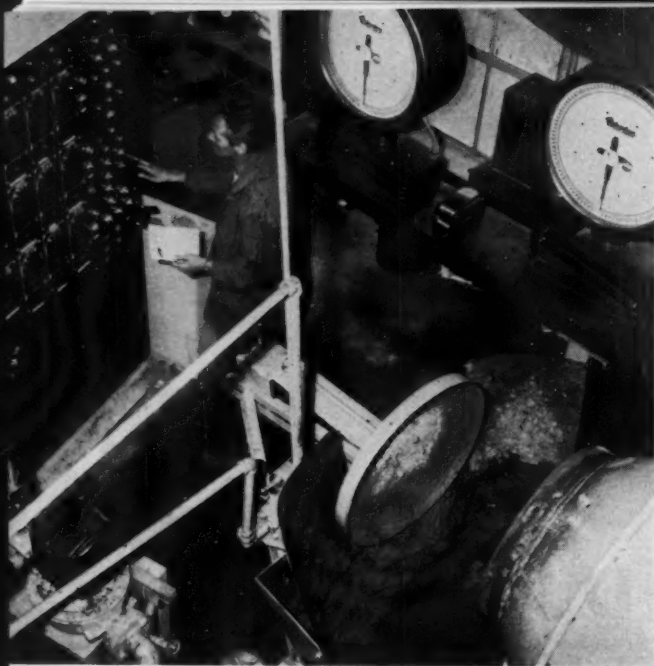
There is much overlap among applications, but scales can be classified into these broad use-categories: weighing, batching, feeding, blending, proportioning, inspecting, counting, and packaging. Although little discussion of the weighing "workhorses" of industry and commerce is included here, some simple but effective adaptations already made with the basic scales may be valuable to other companies.

## Weighing While Conveying

For example, incorporated in the overhead conveyor of E. Kahn Company, a Cincinnati meat packing plant, is a quick-reading dial scale. The conveyor, running from right to left in the illustration, carries lambs on hooks centered at three feet. When a carcass passes over

*(More on next page)*





**ABOVE:** Incorporated in the overhead conveyor of a meat packing plant is a "floating" section which transfers weight of passing carcasses to a dial scale.

**LEFT:** Entire operation in concrete plant—from storage bins to mixing truck—automatically controlled by one man at a centralized control panel.

a "floating" section of the track, vertical rods and weigh beams transfer its weight for registration on the dial scale. Through compensation for the downward thrust of the conveyor pull, it is possible to weigh each carcass within close tolerances, as it moves along, without stopping the conveyor.

Roller conveyor lines of Cincinnati Industries carry strapped cartons of moisture-proof bags. A section of each conveyor is independently mounted on a scale platform. Magnified reading dials indicate the weight of each package as it travels along the conveyor and is pushed from the caster table to the belt conveyor for delivery to the floor below.

Of course, these basic applications are not limited to light materials. For instance, see the portable dial unit for in-transit weighing of metal sheets on a conveyor belt, and the foundry batching scale with printer attachment in an iron smelting plant.

In batching and proportioning, precise controls are required for many processes utilizing belt conveyors and feeders. Demand for precision come not only from critical requirements of the process itself but also from the need to prevent unnecessary wastes in time and/or materials. "Automated" processes require more than a weight recorder—they demand equipment that will provide complete, automatic control.

One of the latest of such installations is at the J. P. Loomis Concrete & Supply Co. of Akron, Ohio.

Making up a large number of different formulas, the system is accurate to  $\frac{1}{4}$  of 1 percent on cement weights and  $\frac{1}{2}$  of 1 percent on aggregates. The entire operation—from storage bins to mixing truck—is automatically controlled by one man working at a central control panel. Controls record weights and lock formulas into the system for repeat runs. Automatic compensation prevents errors which might result from carryovers from previous weighings.

All storage bins, proportioning equipment and mixers are installed around a single platform to permit

the one-man operation. From the control panel, the operator dials out the exact amount of each ingredient required for the mix. Ingredients are then weighed cumulatively, weights are automatically recorded, ingredients are delivered to a mixer, water is added, and the mix is dumped into a mixing truck. The complete cycle takes approximately two minutes.

Loomis' business is highly diversified, with orders coming from private individuals, business concerns and state and local government agencies. Its peak concrete production is about 840 yards a day, and it can prepare 30 mixes an hour at a rate of 90 yards per hour.

Much of this work involves mixing new formulas to a customer's specifications. Precision proportioning and automatic recording of each ingredient in the mix are important in eliminating any question of formula accuracy.

**IN-TRANSIT WEIGHING** of metal sheets traveling on conveyor is made possible by portable dial unit.



### Tripled Proportioning Accuracy

Before installing the new system, the firm had no built-in automatic recording device. During a mixing operation, the operator would record on graph paper the amount of each ingredient he had fed into the mixer. This sometimes led to formula inaccuracies of 30 pounds per ton or more.

One of the new scales has a 5000 pound capacity, calibrated in 5 pound units, and is used for weighing cement. The other, a 10,000 pound capacity scale with 10 pound increments, weighs aggregates and can handle up to any three out of five per mix. These scales are accurate within these increments. As a result, Loomis concrete formulas are three times more accurate than those from its former system.

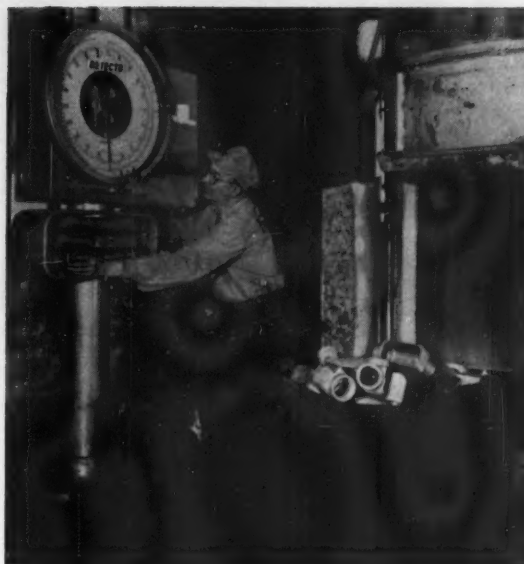
The panel includes three selector dial systems, each containing four dials, and provides push-button control of every phase of the mixing operation until the concrete is delivered to the mixing truck. In this way, the operator can control the entire operation without moving from the platform—and know that the mix will be accurate.

As each ingredient is fed into the scale, its weight is recorded on a paper tape. At the end of the proportioning operation, the operator removes the printed portion of the tapes from the machines, compares them with the actual order from which he set the selector dials, and then attaches the tapes to the order as a permanent record of the delivered weight of each ingredient.

This eliminates any question of accuracy or quality, particularly when mixing new formulas. The operator is able to double-check his own work after he has dialed the formula into the system.

The formula-locking mechanism permits the operator to repeat a desired mix once it has been set up in the selector dials. If the operator knows he will be running the same formula several times, he can lock the dials on this and then simply press a dial button whenever he wishes to repeat it. He can lock formulas on one or two sets of dials for long-runs and still have the third set open for one-shot or short-run mixes.

The automatic mechanism which prevents any carry-



**BATCHING SCALE** with printer attachment provides control in feeding furnace of smelting plant.

over of previous weighings is electrically activated. Following scale discharge into the mixer, a tare check circuit is energized to prevent starting of the next weighing cycle until all material has cleared the weigh hopper and the scale is in perfect empty balance. This balance is verified by the dial scale pointer.

Should the actual weight of each ingredient in the scale differ from the dialed weight by more than the tolerance, the entire system stops and a red warning light—for under or overweight—flashes at the control panel. This allows the operator to use manual controls to correct the mistake or account for it by proportionately increasing the other ingredients.

Ingredients are stored in seven bins—two for cements, five for such aggregates as gravel, slag, sand and limestone—located above the mixer. Bins are elec-

*(More on next page)*

**MAGNIFIED** reading dials indicate weight of each package as it travels along roller conveyor line.



**SUSPENDED** tank scale with printer and attachments for weighing, sequencing, and recording liquids.

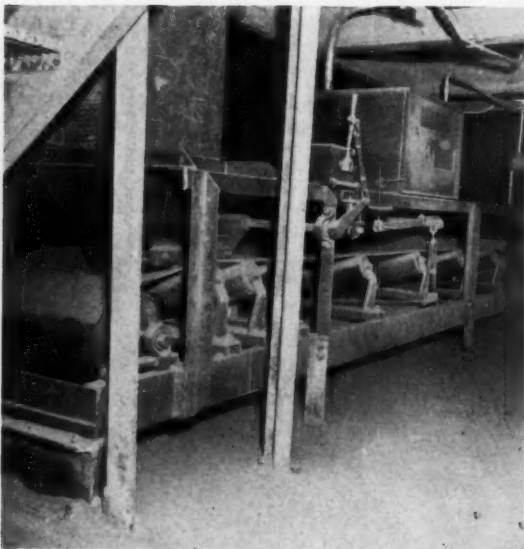




**SCALE FEEDERS** in bank sequenced-timed so that accurately weighed materials are thoroughly mixed.



**VERTICAL GATE** feeder in flour mill has electromagnetic clutches energized by scale beam circuits.



Blending and proportioning automatically, scale feeder (above) is in system, controlled by panel (right), in which three different materials collect on a single belt.

trically connected to the control panel. Aggregates are dropped by gravity; cement is blown into the system by an air-flow process.

Water is added from an automatic meter, which shows the operator the amount entering the mixer. During mixing, the operator can open the mixer and observe the operation without moving from the platform.

The loading station for the mixing truck is located directly below the mixing plant. When the mix is completed, the operator presses a panel button. This actuates a hydraulic mechanism that tilts the mixer. Concrete then pours through a two-door opening in the mixing platform into the truck bed.

### Continuous Proportioning and Blending

Complete and highly accurate control in continuous processing is achieved through modern belt conveyor scales and feeders. When desired, rates can be pre-set and held regardless of changes that may take place in the flowability or density of material being conveyed. If the rate has been set for, say, 15 tons per hour and it increases to 16, a cam actuated microswitch on the integrator of a scale can send an electrical impulse to a variable speed feeder discharging onto the belt. This slows the feeder until it reaches its neutral position, at 15 tons per hour.

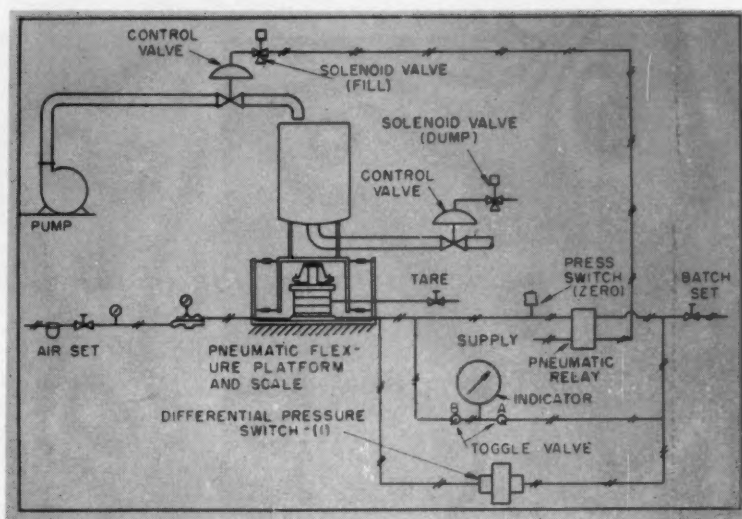
Blending and proportioning are shown in a cement producing plant. A scale-feeder unit and a remote control panel are shown, but the plant actually includes another feeder and a scale so that it can blend, by weight, specified percentage of three different materials onto one collector belt.

In this particular installation, each unit can be individually controlled at the panel. At the same time,





**LIQUID BATCH CONTROL** system utilizing pneumatic scale-platform scale with flexure members instead of knife edges. Indicator dial and operating controls may be installed at any remote location.



all three units are interlocked—if the material from one bin jams, the entire blending and collecting system automatically shuts down.

The remote panel gives the operator full control over the entire system. At the top are start-stop buttons for each unit. Next are relay reset switches and rate-of-flow indicators. Below these are start-stop buttons for the two vibrating feeders, remote totalizers, increase-decrease indicator lights and, finally, increase-decrease switches.

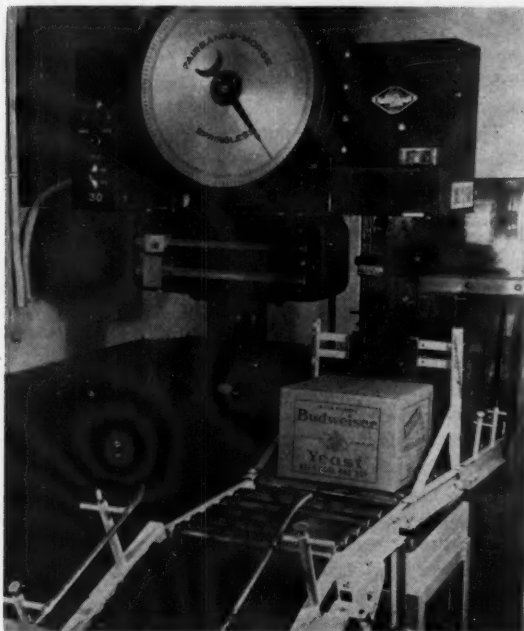
From this panel the operator can start or stop any one of the units or all of them. He can change the

proportions of the materials being blended. He can also check his rate of flow, and he has a constant record of the total tonnage over each unit. Indicator lights tell him if the units are increasing or decreasing the flow of the materials, either automatically or in response to his directions. From the panel, too, he can turn off the entire interlock when it is necessary.

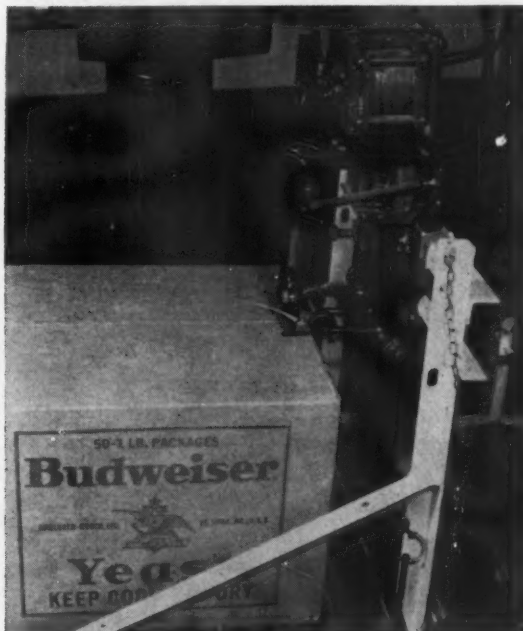
With some additional equipment, the master control mechanism can increase or decrease the flow of several materials being blended and still maintain the required proportions for each material.

*(Continued on page 148)*

**PERMANENT** record on conveyor scale, completing weighing operation every  $8\frac{1}{4}$  secs. at Anheuser-Busch, is kept on tape wound in enclosure upper right.



**UNDERWEIGHT** carton being weighed, marked and counted. Solenoid-operated lever to which crayon is attached trips lever (top) on mechanical counter.



*How, in the inspection of precision parts . . .*

## **Revised Handling Reduces Rejects**

# **BY 97%**

**N**OWHERE else is quality control more important than in the production of jet aircraft engines. It is well established that the contributions of mechanized material handling to such quality control have been numerous and important. But in few, if any, other operations have they been more effective than in this example from Ford's Aircraft Engine Division.

The J57 turbojet engine has seven anti-friction main bearings—two duplex ball bearings and five roller bearings. They range in outside diameter from five to nine inches and rotate at speeds up to 6,000 or 10,000 RPM. It can be seen that these are relatively large DN values—that the bearings must, therefore, incorporate the highest quality of materials and workmanship to function within the design limits at turbojet engine RPM's, loads, and temperatures.

In the beginning of the jet engine program, it was determined that these seven main bearings—to be supplied by six vendors—would be 100 percent inspected at Ford, after the vendor's final inspection. The purpose of this was to double-check these ex-

tremely critical parts. For the two main ball bearings, this meant that each bearing would be inspected individually for flushness, contact angle, radial clearance, OD, ID and width. For roller bearings, inspection would be radial clearance, OD, ID and width.

Inasmuch as considerable expenditures of time and money were to be involved, a special bearing inspection crib was provided in a building removed from the normal inspection areas.

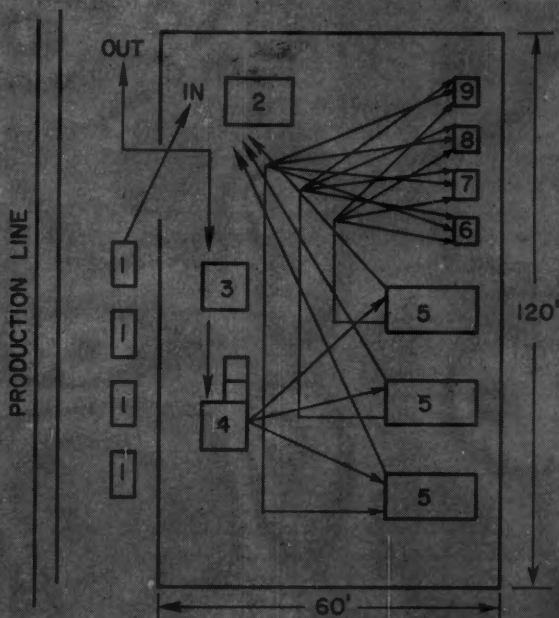
This building has a controlled temperature. Within it no machining is permitted. These two factors are necessary to insure dimensional correlation with the vendor's inspection and to prevent the possibility of bearing contamination by foreign particles. Unusual cleanliness requirements are maintained.

A discussion of blueprint tolerances will emphasize more fully the critical nature of these parts. The tolerances on the major diameters of the bearings vary from .0004 to .0006 inch. The width of inner and outer races on the same bearings are usually within .0001 inch. Ball sphericity is limited to .00002 inch and raceway out-of-roundness to .0003 inch. The inspection process is so delicate that no bearings are inspected until 24 hours after the degreasing cycle to insure that bearing temperatures have stabilized with respect to room temperature.

If a bearing is ever dropped it is almost certain to die in the scrap pile as dimensional control would be lost completely. Bearing prices vary from \$65 to

*Here's an example of material handling principles applied in a highly comprehensive manner to make a great contribution to the production of an essential product. The article is derived from the First Prize paper in the latest Material Handling Competition at Illinois Institute of Technology sponsored by the Wunsch Foundation of the Silent Hoist and Crane Co. The award winner is Thomas J. Dolan, a recent mechanical engineering graduate of the Institute.*

FLOW PATTERN - OLD CRIB



- KEY 1.** Loaded pallets, delivered from Receiving, awaiting inspection.  
**2.** Log-in area  
**3.** Degreasing tank  
**4.** Dipping tank (engine oil)  
**5.** Inspection tables  
**6-9.** Flushing, contact angle, axial, and radial clearance fixtures

\$200 each. From this data it can be seen that a very delicate handling problem presents itself.

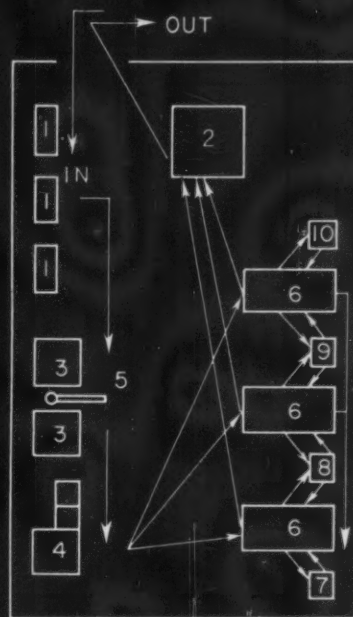
Initially the rejection rate, to everyone's amazement, was 27 percent. The vendors were indignant when informed that their parts did not meet blueprint requirements. Not only was their pride of workmanship questioned but also they had to pay the cost of all shipping. They, of course, contended that the bearings did meet all blueprint requirements. They believed the bearings were not being properly inspected at Ford, and they would gladly prove it. Management decided to evaluate the inspection procedures, and the writer was assigned to this project.

#### THE PROBLEM:

Production schedules are classified as security information, but it may be stated that the flow of bearings into the inspection crib is considerable. Bearings are received from the vendors via plane and then truck. They are individually packaged and boxed in sets of four to eight.

At the beginning of the program, when the bearing

FLOW PATTERN - NEW CRIB



- KEY 1.** Loaded pallets awaiting inspection.  
**2.** Log-in area  
**3.** Degreasing tanks  
**4.** Dipping tank  
**5.** Jib crane  
**6.** Inspection tables  
**7-10.** Flushness, contact angle, radial, and axial clearance fixtures

inspection crib was quickly set up, location was determined by space available at the time.

Bearings were transported from the Receiving Area by fork lift truck on 40 x 48 inch wooden, double-entry pallets loaded approximately 12 inches high over the entire pallet. Due to the location of the crib with respect to the assembly line, it was not possible for the lift trucks to enter the crib. As a result, the trucks deposited their loads 20 to 40 feet from the crib entrance.

It was necessary for the inspectors to hand-carry the bearings into the crib from the pallets. They were then logged in, opened, degreased, dipped in light engine oil, and laid out on tables for inspection. All these processes were executed solely by human effort; no mechanical devices were used.

#### Inspectors Did Heavy Lifting

Since the number of bearings entering the crib was considerable, a large portion of the inspector's time was used for duties other than inspection. It

(More on next page)



should be noted that these duties involved considerably more exertion than the normal inspection process. Inspection involved lifting relatively heavy gages to check OD, ID and width dimensions. To inspect the bearings for flushness, contact angle and radial and axial play, it was necessary to hand-carry each bearing an average of 17 feet, or a total distance of 68 feet to the four gages. These parts weighed one to five pounds each. They could not be bumped or rattled because the result might be internal damage to the balls, rollers and raceways. An operator fatigue problem was obvious.

The writer was not fully aware of the personal health factors except in this respect—excessive numbers of bearings were being rejected either because they did not meet blueprint requirements or because of excessive internal damage. Further study revealed that of all the inspectors—one man and four women—the man was by far the poorest operator. He possessed the physical qualities of a good inspector, but his mental attitude was poor.

It was also noted that the rejection rate of all the inspectors was higher in the afternoon than in the morning. And, invariably, the midweek days took a higher toll than Mondays or Fridays.

Further, some of the larger gages left something to be desired in their design. Most of them were air gages which required the operator to "baby" them or "play" with them to achieve the true measurements. This procedure taxed both patience and strength of the inspectors and resulted in many unnecessary rejections.

The obvious conclusion following this study was that excessive rejections resulted from operator fatigue. After the large amount of manual labor required to set up the bearing for inspection, there was little skill left to perform the precision check. It was determined, therefore, to streamline the inspection process. The object was to reduce the excessive material handling by inspectors without creating a need for special laborers to perform these jobs.

#### THE SOLUTION:

The crib was relocated in another building similar to the first building as to temperature and machining. A jib crane was installed between two vapor degreasing tanks. Electric fork trucks were approved for transporting the bearings.

Inspection benches were relocated closer to the stationary checking fixtures. A coffee-break procedure was revised so that the inspectors were required to leave the crib during the break. The lone male inspector was reassigned, and a laborer was assigned permanently to the crib to perform all manual labor task not directly involving inspection. A new, im-

proved flushness gage was provided.

The new procedure, somewhat simplified, follows: Fork trucks now unload bearings inside the crib. An inspector logs them in, and the laborer opens the boxes and loads the preserved (greased) bearings into strainer baskets.

Strainers are hooked up to the jib crane and transported into one of the two degreasing tanks. A two-minute cycle follows in the tank, and the bearings, still in the strainers, are lifted out of the tanks by the crane and loaded onto floor trucks. The laborer then picks up each strainer individually, dips it into a tank containing light engine oil, and replaces it on the cart. Strainers are then wheeled to the inspection tables and unloaded.

#### Path Patterns In Flour

As was noted above, the locations of the stationary checking fixtures were revised to place them closer to the inspection tables. The general manner in which the entire crib layout was revised was according to the principle of straight line flow. To find the best layout, a simple but efficient technique was employed.

To determine the paths traversed by the inspectors, and which were most used, quantities of flour were sprinkled on the floor of the old crib, and photographs of the patterns were taken at the end of each shift. Not only were the paths recorded but a load/path ratio was computed for each path since each one separately represented the operator carrying one particular bearing. As each of the seven main bearings varies in weight it appeared desirable to locate the fixtures for the heavier bearings closer to the inspection tables. This was not completely desirable, either, as these distances were shorter than some of the distances required to carry the lighter bearings. A suitable compromise was reached by the load/path method. By utilizing this technique, it is believed the most efficient layout was selected for the new crib.

At the completion of the inspection cycle, the inspectors now fill out a printed form regarding the inspected dimensions. The laborer loads bearings on the pushcart and wheels them to the preservation area. Here bearings are coated with petrolatum and repackaged in their original containers. Acceptable bearings are transported to the Bond room; rejected bearings are transported to the Rejected Material crib.

Perhaps none of the more spectacular aspects of material handling were utilized in the solution of this problem, but basic principles are clearly distinguishable within the framework of the new layout.

The advantages realized have been apparent in the rejection rate, which is now 0.75 percent despite an increase in production schedules.

# MAINTENANCE

## NOTE BOOK

### Check Your Hoists for Proper Wiring

By E. J. Byrne, Product Manager  
Chisholm-Moore Hoist Div.  
Columbus McKinnon Chain Corp.

**A**RE you *sure* your electric hoists are properly installed?

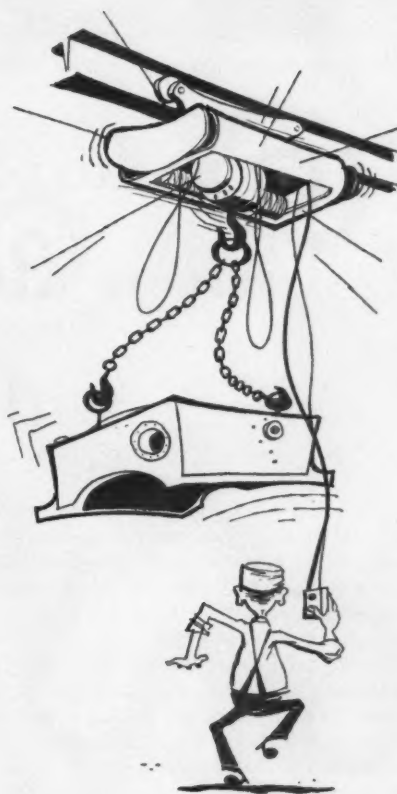
Before answering quickly in the affirmative, remember that because a hoist raises and lowers at the touch of a button (or pendant rope or remote control) it is not necessarily wired correctly. Costly downtime and repairs and possibly even serious accidents often can be avoided by taking a few simple precautions when installing overhead electric hoists which operate on three-phase current.

Where hoists are operated on three-phase current, the current must travel in the right direction. Otherwise, the motor will operate backwards. If a hoist is wired incorrectly, causing phase reversal, and the motor is running backwards, the operator may feel that it does not matter in which direction the motor turns. There is some truth in this, insofar as the motor is concerned. However, it makes a tremendous difference on the operation of the safety upper limit.

If the hoist is wired incorrectly in installation, not only does the motor run backwards, but *the upper limit switch is ineffective*. Then, when the lower hook or hook block is raised, it may crash into the hoist.

This may happen immediately after the hoist is put into operation. On the other hand, improperly-wired hoists may be in use for a long time without an accident—if conditions are such that the lower hook or hook block has never been raised to its uppermost limit. However, an operator may send the hook all the way up at any time.

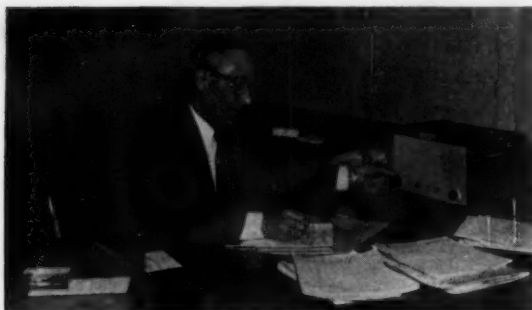
Not all electric hoist installations provide for the three wires being connected permanently and directly to the power lines. In some instances, current collectors may be used. For some installations, it may be more convenient to have a plug on the hoist power cord which is inserted in a wall receptacle. If more than one wall receptacle is used, the phasing or direction should be checked at each receptacle. In every instance, the direction of the current should be checked before the hoist is released for operation or after it is moved to a new location.



Here is how to do it:

Temporarily connect the three wires from the hoist to the three power lines. Then, touch the "hoist" push button (or pull the "hoist" pendant control) and see if the hook moves upward. If it does, the hoist is wired correctly.

If, instead, the hook lowers, *the connections at the power line must be changed*. Switch the connections at two ungrounded lines, then repeat the test to make certain the situation is corrected. Under no circumstances should the internal wiring of the hoist or controls be changed to reverse the direction of the hook.



EXECUTIVE can monitor any or all communications.

## ALLEGHENY-LUDLUM

# EFFECTS Multiple Savings with Mobile Radio

**F**AST and efficient transportation is an important function that helps maintain Allegheny-Ludlum's huge Brackenridge (Pa.) plant as one of the world's largest stainless steel producing plants. Feeding scrap metal to melting furnaces which swallow it 90 tons at a time, moving the finished ingots to soaking pits, then on to blooming operations, and finally to the rolling mills—with no delays enroute—is part of the job that must be done, and it calls for skillful planning by the transportation division.

Miller Torrence, material handling executive, long ago realized that full and rapid communications was the key to increased efficiency in inter-department transportation functions. During his investigation of two-way radio, he and R. T. Eakin, plant manager, visited several manufacturing plants which were using mobile radio, and consulted with W. H. Kirkpatrick, one of Allegheny-Ludlum's industrial engineers.

All three were convinced that radio would not only enable the transportation division to render maximum service with a minimum number of vehicles, but would quickly pay for itself in substantial savings of costly production time.

A further study resulted in the decision to install two-way radio on 21 vehicles, including two tractors,

four straddle carriers, six dump trucks, a demountable-body truck, four flat-bed trucks and four diesel locomotives. They serve 15 production departments at Brackenridge. Ken Sulger, an RCA communications specialist, made detailed recommendations and coordinated the installation activities.

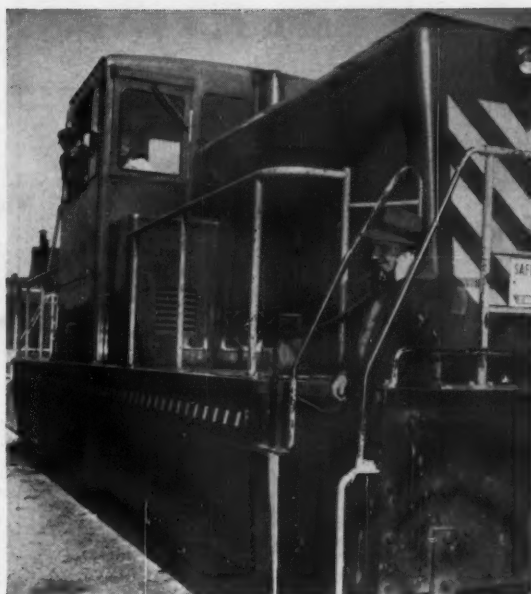
Headquarters for the radio system, which has become the nerve center of yard operations, is a specially-constructed addition to the transportation division's office building. The new radio room houses an ideal dispatch office from which instructions are beamed to any location, indoors or out, within the 100-acre plant.

### Have Additional Dispatch Points

Two other fixed dispatch points, strategically located to service specific areas and production shops, are operated by scale and yard clerks under the supervision of the main control room. The Allegheny-Ludlum station is on the air around the clock. During the day, two men handle approximately 350 calls for the 8-hour shift; during the second and third shifts a single radio operator dispatches vehicles as calls for services are received by telephone.

Advantages resulting from radio dispatching were





STRADDLE CARRIER driver (upper left) can receive instructions while anywhere on the grounds from radio control room (left) where phone requests are handed directly to radio dispatcher. Diesel locomotive (above) performs all types of yard shifting work at the plant, and also can be contacted for last-minute assignments.

immediate and measurable from the time the system was put into operation two years ago. Pickups and deliveries increased substantially, yet mileage was decreased because deadheading was virtually eliminated.

"Before radio, trucks cruised the length of the property without stopping," says Torrence, "now they get instructions enroute and can handle four or five orders going in the same direction.

"Foremen used to be all over the place looking for trucks; now trucks are on hand whenever they're wanted. To do that without radio, we would have to add several trucks and drivers. Even then we wouldn't have positive control of our fleet.

"We figure our radio system paid for itself within six months. But most important, it has improved our efficiency by enabling us to keep equipment working at the most important jobs in the most economical sequence with minimum lost time."

According to Kirkpatrick, who analyzed the effects of radio before and after its installation, many departments outside of the transportation group have benefited materially.

"For example," he points out, "we had a problem which centered about the movement of hot ingots by

rail. The key to this problem was the limited communications between melt shop, stripping operations and soaking pits. With the use of radio, these three functions were drawn together to become a smoothly operating unit.

"Many similar advantages are becoming apparent in our truck utilization. By combining radio and the straddle carrier we have been able to utilize outside storage areas. The driver radios the dispatcher the location of conditioned bolsters which, when wanted, can be identified, picked up and delivered for reheating and rolling. This in turn has resulted in less congestion of under-roof storage areas.

"The length of time previously planned to make improvement of steel from one area to another was 4 to 6 hours. This has been shortened to 30 minutes because, with radio control, materials arrive at the right place at the right time for smooth and efficient production."

Savings of this kind are responsible for a sizeable increase in the mill's rolling capacity, in Kirkpatrick's opinion. In summarizing the plant's experience with mobile communications, he points out that radio has meant much greater efficiency—a new concept of flexible operations.

**MATERIAL**

**HANDLING**

**ARITHMETIC**

**A summary of a recent  
speech by Robert L. Fairbank,  
vice president and sales manager  
of Towmotor Corporation,  
and current first vice president  
of the Material Handling  
Institute.**



*In presenting  
of any material*

## **5 FACTORS**

**W**HEN a company decides it is going to make a drive to cut its handling costs, it usually gives first attention to the purchase of new handling equipment. The question immediately is: will the equipment under consideration effect enough savings to warrant the capital invested in it?

It is at this point that many companies make their mistake. Because, in calculating savings affected by the use of handling equipment, there are several factors which must be considered, some of which are often overlooked.

### **Labor Costs**

The obvious place to start figuring is, of course, in the field of labor costs. Today, with minimum wage laws and with wage levels where they are, this is a prime consideration. Furthermore, it is increasingly difficult to get men for the purpose of moving materials by hand. So-called common labor has practically disappeared. So, labor becomes more than just a question of arithmetic. Companies find it necessary to mechanize internal transportation often because they simply can't get men to do the work.

### **Inventory Investment**

Inventory is often a needless expense. In fact, reduction or elimination of inventory is one of the basic principles of automation. If a certain type of material handling equipment can make possible a substantial inventory reduction, it will certainly be a wise investment.

Suppose a given company has an inventory of \$10 million. If, by effecting a faster and more orderly flow of materials through the plant, that inventory can be reduced 30 percent to \$7 million—you have released \$3 million of invested capital. On the basis of a 6 percent annual return on invested capital, that alone would represent a savings of \$180,000 a year.

Another factor to consider in with regard to inven-

*a case to management for the purchase*

*handling equipment, be sure to include . . .*

## **THAT CONTRIBUTE TO COST SAVINGS**

tory is the method of storing it—how you utilize available space. The cost of plant or warehouse space varies, depending on the nature of the space, but in most cases plant space costs a minimum of 30 cents a cubic foot; often much higher. Therefore a typical storage room of 200 x 100 feet with a 20 foot ceiling would represent a capital investment of at least \$120,000 for the 400,000 cubic feet of space.

Before the use of mechanical devices, materials could be piled in that room only as high as men could lift them; the upper half of the space was completely wasted. The introduction of a lift truck in the room allows the company to take advantage of its "air rights", allowing it to pile goods clear up to the ceiling. One-half of the space will now do the storage job that formerly required the whole room. Now, only 200,000 cubic feet of space are needed, instead of 400,000. The other 200,000 feet, representing a capital investment of \$60,000, is released for other purposes.

If a company is expanding, this sort of efficient space utilization may make it unnecessary to construct additional plant facilities. Here again is an example of making more efficient use of invested capital, through the utilization of material handling equipment.

### **Production Efficiency**

The vital rate of output per man-hour depends on developing the smoothest possible flow of work-in-process through the plant. If the material handling system is weak or irregular, production is often held up. A machine or a whole department may stand idle because work-in-process has not yet arrived from a preceding station.

There is an obvious, direct relationship between the productivity of the workers doing the actual production, and the flow of work through the plant. A good material handling system will therefore show a savings in direct labor costs, as well as in indirect labor costs.

### **Improved Working Conditions**

The final factor might be termed the human factor. It has to do with safety, fatigue, employee comfort and better working conditions. It would be difficult to try to measure these advantages in dollars, but they are very real considerations.

Industrial accidents are still a very real threat in most companies, and thoughtful managements are aware of the cost—not only in lost man-hours but also in public relations—of accidents in their plants.

Furthermore, it is recognized today that plants with modern equipment for improving working conditions—plants which demonstrate to the workers that their welfare is important to management—are the ones which attract top-notch personnel.

It may not be possible to pin-point the specific dollar value of each one of these potential savings. But it is possible to come up with an estimate which will be close enough to point out the contrast between the cost of a material handling system and the cost savings it may make possible. Each of these five areas should be carefully considered, and the total savings in all of them may be far greater than expected.

There is a tendency, in computing such savings, to think only in terms of the first and most obvious of these factors—labor costs. But labor is only one of five important considerations. Each of them should be carefully studied, and the total savings may be far greater than those indicated merely by the study of labor costs.

A department head or plant manager may see an obvious need for a certain type of material handling equipment, and recommend to the front office that the equipment be purchased. That recommendation, if it is to carry any weight, must contain some indication of the possible savings to be effected. If the department head or plant manager really wants that equipment, he should build up his case for it very carefully.





POWER CRANE with clamshell loads rail cars with bauxite which is hauled to the sea, dried and stocked.

## How Kaiser Aluminum COORDINATED

**H**ANDLING some 800,000 tons of alumina annually, Kaiser Aluminum & Chemical Corporation's huge plant at Baton Rouge, Louisiana, is one of the largest of its kind in the world. In fact, this plant produces nearly one-third of the alumina used in the aluminum industry. To maintain this high production requires close coordination and integration of conveyors and other handling equipment.

Aluminum differs from most metals, of course, in that it is not found in its metallic form. It is derived from aluminum oxide, or alumina, which is aluminum chemically combined with oxygen. The oxide is plentiful in the earth's crust, the principal ore being bauxite, which has the appearance of red dirt. In making alumina, the oxide is separated from other minerals in the bauxite.

The two steps required to make aluminum are the extraction of alumina from bauxite and the reduction of alumina to aluminum with electricity. The na-

**BELT CONVEYOR** carries Jamaican ore from ground-level hopper, up a 250-foot hill and onto stockpiles.



**TWO-WING STACKER** rides on rails, is fed by belt conveyor, discharges ore onto one or both stockpiles.



**TRAVELING HOPPER** straddles conveyor belt which it feeds and it is served by power crane and dragline.

Uses Diverse Types of Equipment in a . . .

## SYSTEM FOR HIGH VOLUME BULK HANDLING

ture of these processes influences the location of an alumina plant to hold down transportation costs for both the ore and alumina and to be near adequate supplies of water, lime, fuel and electricity.

Most of the bauxite used by Kaiser is mined on the island of Jamaica by Kaiser Bauxite Company, a wholly-owned subsidiary of Kaiser Aluminum, although a portion of the ore comes from Surinam. Jamaica has one of the largest known bauxite reserves in the world, and the island has a natural advantage in its proximity to the United States, with a water haul of only 1100 miles to Baton Rouge.

The Kaiser facilities in Jamaica include open pit mines, a 13-mile railroad linking the mines with Port Kaiser, rotary drying kilns and storage and docks. At present, 1½ million tons of dried bauxite can be produced annually, but this can be increased by adding more mobile equipment.

Drag-lines are employed on progressive working levels in the rolling terrain, bringing ore up to the stockpiles. Shovels load from the stockpiles into dump trucks, and there is a short haul to the below-ground-level hopper, which is covered by a grill for scalping large lumps.

This hopper feeds a 30-inch-wide belt which runs for a quarter of a mile up a 250-foot hill, spilling over a stockpile at the rate of 600 tons per hour. Shovels load from this stockpile into hopper cars on the company railroad for the run to the seashore.

When mined, the Jamaica bauxite contains about 20 percent moisture. Before it is shipped to Baton Rouge, it is passed through oil-fired rotary dryers which reduce the moisture to about 15 percent, making it easier to handle. The dried ore is loaded by conveyor belt aboard 10,000-ton ships which travel the 1100 miles to Baton Rouge in 4½ days.

Four ships arrive each week, on an average, and each requires from 24 to 30 hours for unloading. Shipping is continuous, with the vessels loading, sailing, unloading and returning without a break.

Unloading is extremely rapid and efficient, very much like the transfer of ore from carriers at Great Lakes ports. Before a ship ties up at the dock, the hatch on one of its five holds is removed. One of the two gantry cranes moves along the dock into position. As soon as the lines are made fast, unloading begins and continues until all five holds have been emptied.

*(More on next page)*

## COORDINATED SYSTEM

*Continued*



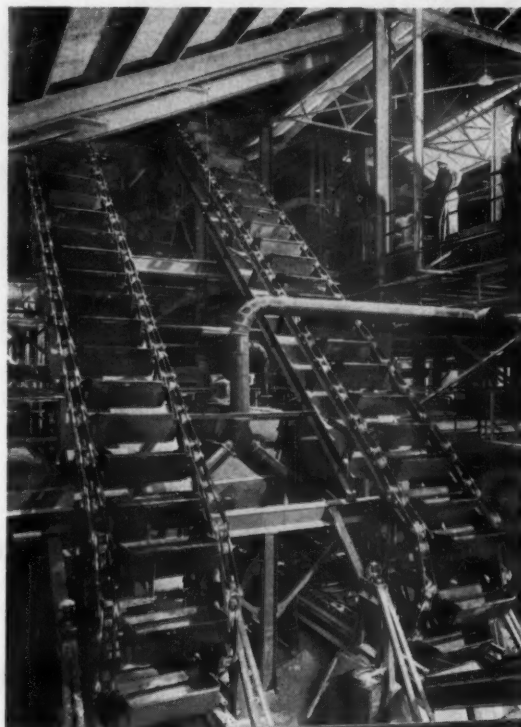
**DOCK CONVEYOR** is 450 feet long and empties into another conveyor running into division point at plant.

The gantry crane buckets have 3.5 and 4.2 cubic yard capacities, and travel the length of the gantry crane-way. They dump into 30 and 40 ton hoppers on the land side of the crane.

These hoppers feed a 30-inch-wide belt. A dust collector at the loading point recovers the light ore, which would otherwise blow away, and eliminates a dust nuisance.

The dock conveyor is 450 feet long and empties into a cross conveyor which runs for 900 feet to a division point at the plant. This division point stands about 30 feet high, near the end of the storehouse. From it, ore can be sent to bins in the storehouse, to stockpiles or directly to processing. Chemical control, which governs all the processing, begins with automatic sampling of the ore coming up to the division point on the second conveyor.

Because Jamaican bauxite is sensitive to moisture, it must be stored under cover. The storehouse is 650 feet long, 90 feet wide and 80 feet high, holding 90,000 tons. Bauxite for this storage is discharged into a belt which runs just under the ridge. It has a traveling unloader which takes the ore off, distributing it evenly along the length of the house.



**BUCKET ELEVATORS** take processed bauxite (alumina) from coolers to local bin storage above rail tracks.

The second direction in which ore can be dispatched is by means of a 36-inch-wide belt which runs through the storage piles in an alley. This belt is reversible, and is used for bringing ore back to the division point for transfer to conveyors leading to hoppers which feed to processing. Third of the three directions is to the hoppers feeding into the process, either in the first movement from the dock or in recovery from storage.

Outside storage for the Surinam ore is similar to that for coal and iron ore. The stockpile area is long and narrow and is equipped for bringing ore in to storage, and also for taking it out. The long conveyor from the division point runs through the area between concrete walls. A traveling two-wing stacker runs the full length on rails, straddling the conveyor alley.

The stacker is a structural tower with a hopper at the bottom, and an elevator which brings ore up from under the hopper to discharge onto the belts of the two booms. The long conveyor belt rises to pass through the tower above the hopper, and its load is taken off as it passes. The stacker belts run in fixed horizontal booms, or wings, and discharge onto stockpiles on one side of the alley or the other. Either of

*(Continued on page 92)*





RAW COILS of steel wire are carried by electric ram-lift truck from factory's stockpile to welding station.



SPECIAL DEVICE on lift mechanism permits electric truck to place coil in position for nut-forming machine.

Nut and Bolt Plant . . .

## Keeps Incentive Drivers Happy

. . . As it operates its large fleet of electric fork trucks a full 8-hour shift.

**W**HEN drivers of electric lift trucks at Russell, Burdsall & Ward Bolt and Nut Company were put on incentive basis, drivers complained they could not get a full shift operation from their trucks. The old style batteries then used would run down somewhere around the 7½ hour mark, robbing them of a precious last half hour's incentive work.

Fifty-five buildings, encompassing some 600,000 square feet, make up the company's Port Chester, New York, plant. During the working day, the area is traversed steadily by a fleet of 67 electric lift trucks. From raw coils to finished nuts and bolts—from one stage or building to another—a total of 800 tons is moved per day, in kegs, kegettes, crates, cartons and coils. Loads range from a low of 1500 to a high of 8000 pounds.

It's a big operation, and continuous production requires accurate timing and close coordination, with a minimum time interval between transportation of material from one stage of production to another. Trucks have to be at their scheduled work stations precisely on time, or costly work stoppages and irked drivers result.

### Worn Out Batteries Replaced

The problem of getting eight hours of work out of the truck batteries was solved through the use of a new battery which could deliver 66 ampere hours—in the standard size battery tray. This 10 percent increase in power, without any increase in the overall

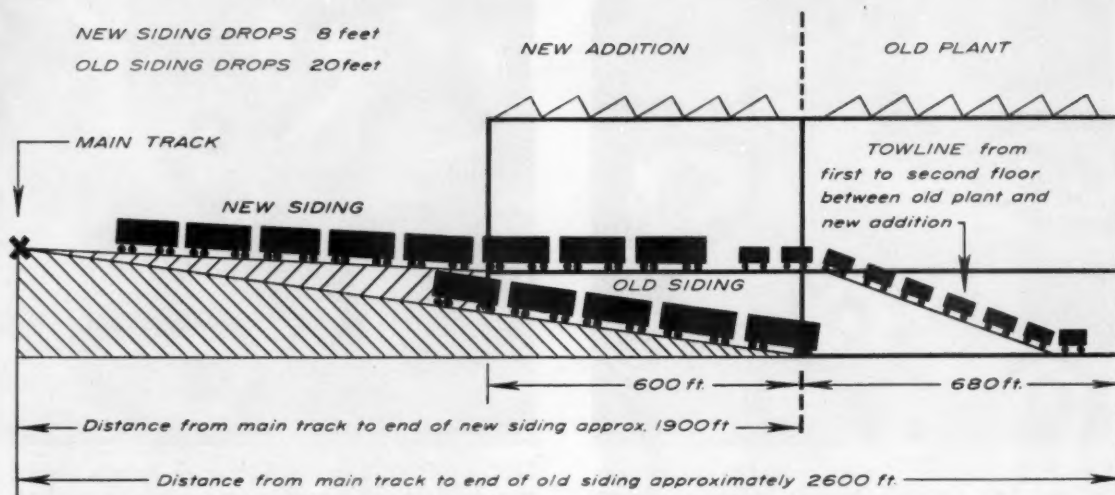
size of the battery, would allow an industrial truck to run past the 8 hour shift mark—with power to spare.

Charging is completely automatic. Each night the driver hooks his truck up to the charger, which cuts off when the full charge has been received. The following day, the truck can be operated without a halt, for the full 8 or 10-hour working shift.

*Photos and data courtesy C & D Batteries, Inc.*

KEGS of nuts and bolts are carried on pallets from packing area to warehouse. Approximately 800 tons of various materials are handled daily by the firm.





When this plant had to expand, it could only build in the direction of the railroad, but if shipping were to be continued from the first floor, the siding grade would be excessive. In overcoming this difficulty, the firm evolved a unique, perhaps widely applicable, handling system which provides . . .

## TOW SERVICE

### for inter-floor operations

**W**HEN Zenith Radio Corporation had to expand its Chicago, headquarters plant, it ran into a squeeze.

The building was served by a siding running up to the railroad line. Shipping and receiving were on the first floor. An expansion could only be made in the direction of the rail line. But if an addition were to be added, the grade of the siding would become excessive. One solution would put receiving and shipping on the second floor. This would be fine for the siding but require that some arrangement be made for continuous flow of all kinds of traffic between floors.

This has been accomplished by the installation of a tow-type, floor-truck conveyor mounted in ramps connecting the two levels.

The conveyor line begins in the receiving department. Here, a long list of such items as TV and radio

cabinets, picture tubes, tube sockets, rivets, and assorted hardware are loaded onto the trucks. This material, which usually comes in cartons, is delivered to the plant either by freight car or highway truck.

From receiving on the second floor, the tow-line carries incoming shipments through a quality control inspection station, assembly storeroom, and warehouse area—all on the first floor. Here the tow trucks are normally unloaded. They then travel into the final assembly department to pick up the output of eight radio and twelve TV lines. This output includes everything from table models to consoles, and unit weight varies from approximately six pounds to 300.

After the tow trucks are loaded, they travel up to the second floor shipping dock. From there they head for receiving to begin the circuit all over again. The total loop is 3,870 feet long and involves four ramps.

One is located between receiving and warehousing, one between final assembly and shipping, and two between shipping and receiving. Since the latter two departments are located on opposite sides of the rail siding, it is necessary for the trucks to drop down to the first floor—then back up again on this leg of the trip.

Although the inclined tow system posed some engineering problems, Zenith officials are confident that it was the best of many solutions considered.

### Overize Tow-pins for Curves

Perhaps the most important difference between conventional drag-line systems and this one is the way in which trucks are attached to the towline.

As with other towlines, a tow-pin on the truck drops into a slot in the floor and engages a trolley that moves through a trench. The trolley is attached to a chain which, in turn, is connected to drive motors furnishing the power needed to propel the truck.

Both the tow-pins and the trolleys used on Zenith's towveyor system were modified to accommodate the need for inclined—as well as horizontal—movement. Tow-pins were made slightly longer than usual; the trolley was changed so that it could bear against more of the pin. As a result, the lower  $1\frac{3}{4}$  inch of the tow-pin is engaged by the trolley, instead of the conventional  $\frac{3}{4}$  inch.

The bigger bite is needed primarily at the top of each ramp. Here, tow-pins tend to pull out of the trolleys because the truck and chain are, in effect, travelling a curve rather than a flat surface. With more of the pin bearing against the trolley dog, any chance of the truck disengaging itself is eliminated.

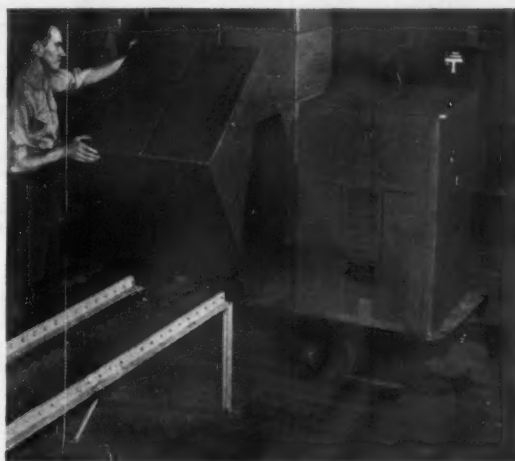
Approximately 180 feet of incline are needed to carry the trucks the 15 feet of vertical distance between floors. Maximum grade is 10 percent. This angle was carefully calculated to prevent load slippage

on the tow trucks. Plant personnel, who also use the ramps, can make it to the top easily. So can loaded fork lift trucks. Curves at the top and bottom of each ramp have a radius of more than 100 feet.

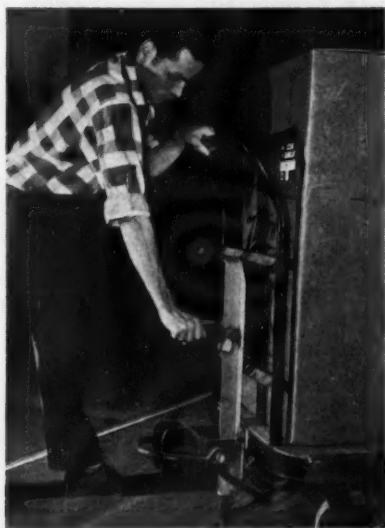
### Beams Reduce Installation Cost

Special construction was required on the second floor to accommodate the conveyor trench, which has a maximum depth of approximately seven inches. By installing concrete beams directly under the trench, it was possible to provide the extra support needed without the expense of building a thicker slab.

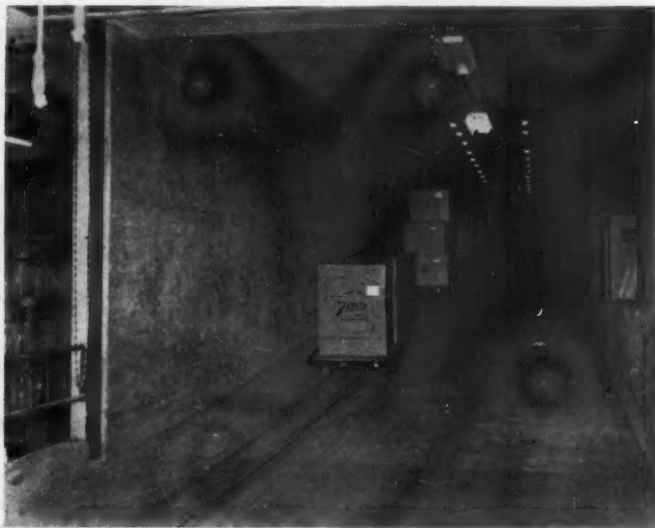
*(Continued on page 94)*



**FOLLOWING ASSEMBLY**, truck will be hooked up to line in background and sent to the second floor shipping dock. Note rails for safe loading from rollers.



**SPRING LOADED** truck hitch prevents pin from dragging on floor and becoming bent. Pins and cable trolleys were designed for compensation on curves.

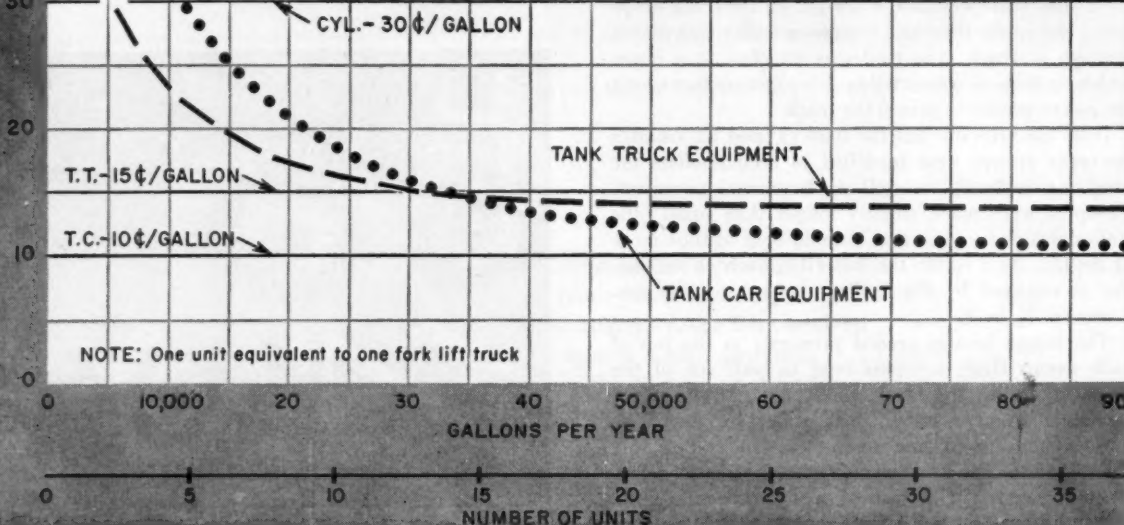


**GRADE**, shown on one of four ramps in the loop, is gradual enough to enable personnel and power lift trucks to reach the top of the grade without difficulty.



# What LP-Gas Supply Is Best For You . . . . . and how much will it cost?

PRICE PER GALLON - CENTS



You'll find answers here to the above  
and many other questions relating to design  
for storage, best handling practices and  
the cost of an LP-Gas system that will  
suit your needs and budget.

By Arthur E. Wastie, Vice President and Chief Engineer, and Warren J. Meyer, Gas Engineer, H. Emerson Thomas & Associates, Inc., Westfield, N. J.

**A**N ENVIABLE SAFETY RECORD has been established by the 30-year-old LP-Gas industry. Its pioneers endeavored to develop a gas system as safe as practically possible. With this thought in mind, standards for the storage and handling of liquefied petroleum gases have been developed. In fact, the National Fire Protection Association periodically issues their *Pamphlet No. 58*, considered the Bible of the industry, which is concerned with the "storage and handling of liquefied petroleum gases." All state and regulatory bodies recognize these standards, and many states have their own regulations which are very similar to *Pamphlet 58*.

Any fuel system requires storage and dispensing equipment and has certain requisites relative to the design, engineering, installation and operation of such systems. There are various types of systems which a company should consider for handling the LP-Gas for plant vehicles, and three of them are:

1. *Large bulk installation* for the receipt of LP-Gas by tank car or tank truck, to be filled into fuel cylinders at the plant.
2. *Small bulk installation* for receipt of LP-Gas by tank truck, to be filled into fuel cylinders at the plant.

3. *Exchange cylinder basis*, in which fuel cylinders are filled at some remote location by an LP-Gas supplier and delivered to the plant.

### Large Bulk Installations

With this type of system, which will consist usually of an 18,000 or 30,000 gallon gross capacity storage tank, first consideration must be given to the availability of a railroad siding and space limitations. In accordance with NFPA standards, storage tanks of this size must be located at least 50 feet from the nearest important building, group of buildings, or line of adjoining property which may be built upon. The railroad siding must be of restricted use, as the unloading time for a tank car is approximately seven hours. In conjunction with such a system, the storage tank must be equipped with safety relief valves, excess flow valves on the various openings, and, naturally, concrete or steel piers for supporting the pressure vessel. The most acceptable method for unloading tank cars is by means of a vapor compressor.

The capital investment for such a system, completely installed, approximates \$20,000.00. It may be broken down as follows:

30,000 gallon propane storage tank .....	\$9,500.00
Storage tank accessory equipment .....	500.00
Unloading compressor .....	1,000.00
Tank car unloading rack .....	500.00
Storage tank and compressor foundations .....	1,000.00
Equipment rigging .....	800.00
Installation labor .....	500.00
Miscellaneous pipe and fittings .....	200.00
Total for equipment and labor .....	\$14,000.00

To this must be added freight, contingencies, overhead, insurance, and profit—which would approximate \$6,000.00—giving a total for the completely installed system of approximately \$20,000.00.

An 18,000 gallon tank, completely installed on the same basis, would approximate \$18,000.000.

### Small Bulk Installation

This type of system would consist of a smaller storage tank, with size dependent upon the type of truck delivery employed. Some fuel suppliers will make partial delivery, but a better price may be obtained for a full truck delivery. Assuming, for the best price advantage, a full delivery of 5000 gallons, the following equipment will be necessary:

7500 gallon gross capacity propane storage tank .....	\$3,500.00
Tank accessories .....	400.00
Tank truck unloading rack .....	300.00
Storage Tank foundation .....	400.00
Rigging .....	250.00
Labor .....	250.00
Miscellaneous pipe and fittings .....	100.00
Total for equipment and labor .....	\$5,200.00

To this must be added freight, contingencies, over-



**BULK STORAGE** methods require filling station with scales and automatic cylinder filling device.

head insurance and profit of approximately \$2,500.00, for a total of \$7,700.00.

### Exchange Cylinder Basis

This method of gas handling requires practically no capital expenditure. The cylinders are picked up, when empty, by a local gas dealer, filled at his bulk plant, and returned to the user. With such a system, a considerably larger number of cylinders must be kept on hand than with the first two systems, for a certain volume of cylinders will always be in transit.

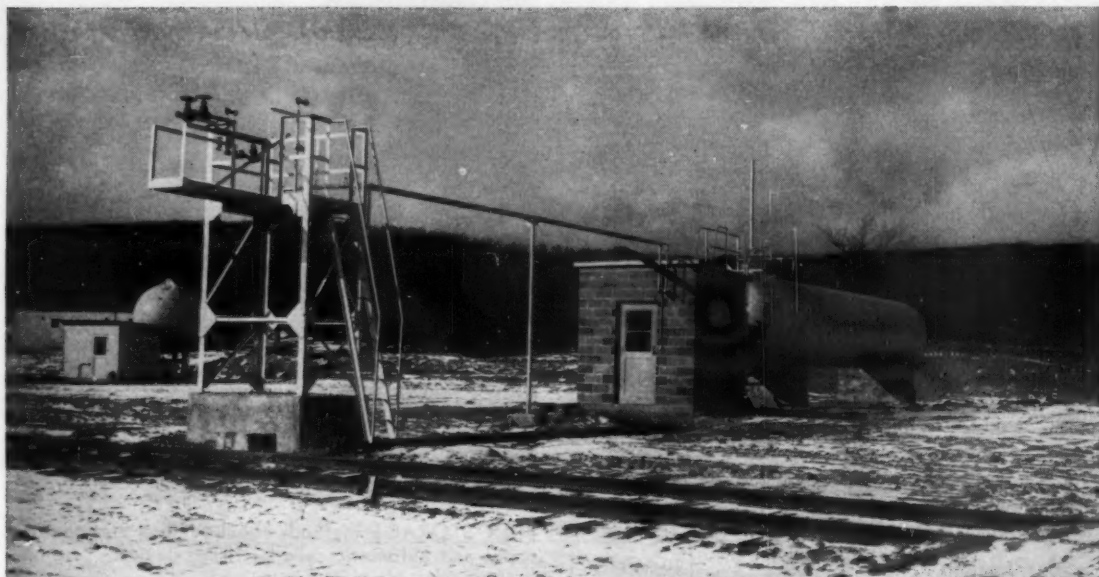
### Auxiliary Equipment Required

With both of the first two methods of storage and related equipment, certain other fundamental equipment is required for filling the cylinders at the plant location. The plant will require a liquid pump to transfer liquid propane from the storage tank to the cylinder filling rack. At the cylinder filling rack, one or more platform scales with automatic cylinder filling device are required, depending upon the plant load and method of operation.

Such a system will basically require the following equipment:

1—Liquid transfer pump .....	\$275.00
Pump accessories .....	100.00
1—Automatic cylinder filler .....	75.00
1—Platform scale .....	100.00
Miscellaneous pipe, fittings .....	50.00
Installation labor .....	200.00
Total for equipment and labor .....	\$800.00

(More on next page)



HIGH-LEVEL tank car unloading rack and 30,000 gal. storage tank, which later will be fenced in.

To this must be added freight, contingencies, overhead, insurance and profit approximating \$350.00—for a completely installed system at \$1150.00.

A building to house the cylinder filling rack may be desired. This of course, depends upon location, plant architecture and other factors which would have to be ascertained by the plant engineering department. A building approximately 8 feet by 10 feet would adequately handle two cylinder filling spots and a small volume of cylinder storage.

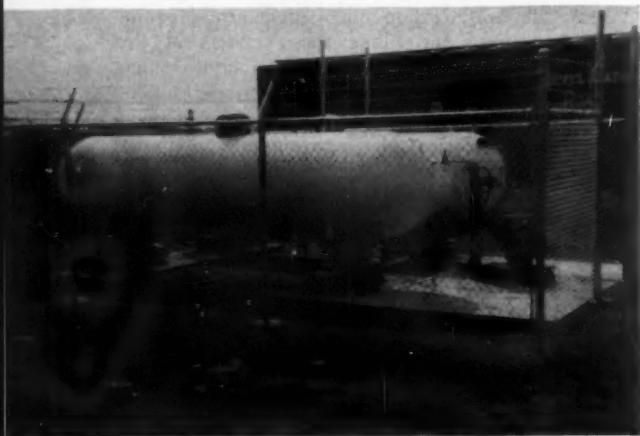
It would be well to mention at this time that many industrial plants throughout the country already have propane standby plants as an insurance against natural gas failures. These standby propane storage systems can readily be converted for use as fuel storage system for the cylinder filling operation, as most of the new LP-Gas systems have bottom liquid connections. A tie-in which can be made between the bottom connection and the liquid transfer pump will supply liquid propane to the fork lift truck cylinders.

#### Cylinder Filling

There are two generally accepted methods of filling the fork lift truck cylinders. The most common is by means of batch filling in which case the empty fuel cylinders are removed from the unit at some central location and replaced with a full cylinder. Periodically, the empty cylinders are picked up and delivered to the cylinder filling rack where all the cylinders are filled at the same time. The cylinders are then returned to the central location for distribution. In some cases, the cylinder filling rack is conveniently located and the full cylinders kept at that point for distribution.

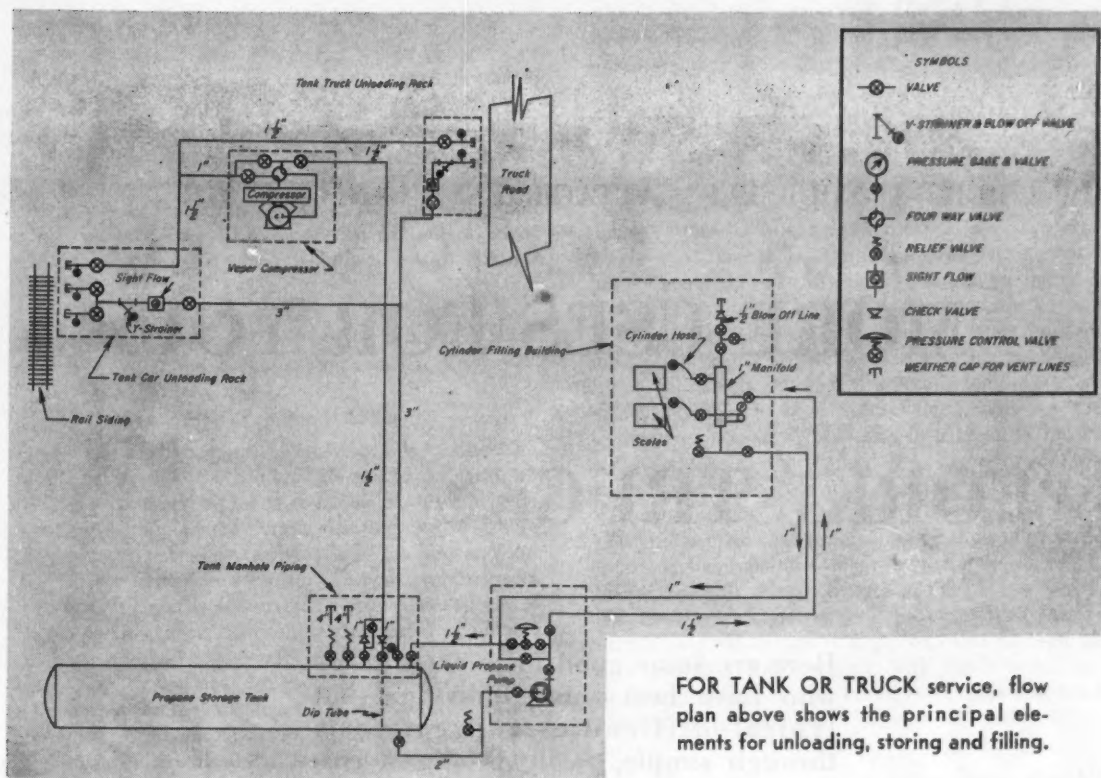
The second method is by means of a cylinder filling rack located at some exterior convenient location close to the center of activity of the fork lift trucks. When a truck is running low on fuel, it is driven to the filling rack. The filling hose is connected to the fuel cylinder and filling is accomplished without removing the cylinder from the truck.

The types of dispensing above described are de-



TANK-TRUCK-SUPPLIED installation of two 1000 gal. tanks, including pump and cylinder filling equipment.





pendent upon the type and size of plant layout and scope of activities of truck units.

### Economics of Storage

Many industrial plants that do not now have a propane storage system may wish to consider the two types of bulk storage systems—that is, tank car and tank truck size, and what would be the economical breaking point as to the type of storage to install.

A chart has been prepared to indicate gas costs and the additional cost per gallon for the basic storage equipment. As mentioned before, the cost of a tank car size installation will approximate \$20,000.00 and the cost of amortizing this over a period of ten years, omitting interest and maintenance, would be \$2,000.00 per year. This is plotted against the number of gallons used per year to arrive at the equipment cost per gallon of product.

The same basis was used in calculating the equipment cost per gallon for the tank truck installation, again omitting the interest and maintenance.

The price per gallon of propane in cylinder lots, tank truck lots and tank car lots is purely hypothetical as the costs will vary in different sections of the country. For a comparative basis, the following figures have been used:

Tank car deliveries, f.o.b. plant site—10¢ per gal.  
Tank truck deliveries, f.o.b. " " —15¢ " "

Cylinder costs

—30¢ per gal.

As heretofore mentioned, these prices will vary throughout the country but the differential will approximate the same percentage. The abscissa of the chart indicates the number of gallons used per year, assuming that each fork lift truck will use about 200 gallons per month. From this chart we can ascertain the economical point relative to the type storage system to install.

From the chart it is apparent that a truck storage system would be the most economical for annual gas loads not exceeding 25,000 gallons, which in terms of fork lift truck units would be for a plant using approximately 12 such units per day.

The tank car type of installation would be the most economical for plants using in excess of 20 units per day. It would also have the advantage of having this large volume storage for other than plant use, such as standby to natural gas, or for special heat treating purposes. Incidentally, it might be mentioned that the tank car type of installation can accept product by means of tank car or tank truck, so that the best product price conditions can be obtained.

### Equipment Considerations

**Storage Tank:**—In regard to equipment, all storage tanks are required to meet the design specifica-

(Continued on page 96)

HOW "BUILD-IT-YOURSELF" ATTACHMENTS CAN GIVE YOU

## MORE USES FOR YOUR "FORK" TRUCKS

Here are some good ideas from users who have beat some individual—but typical—difficulties and cut costs through simple, easily produced customized accessories for fork trucks.



**PALLET BUMPER (left)** consists of metal stops on forks; eliminates damage to pallet caused by heel of forks.



**TWO SPIKES** welded to fork carriage (right) permit handling bulky bales of waste paper, corrugated board.

**M**ANY AN OPERATION has been simplified through the ingenuity of a material handling man and/or a good shop crew. They have come up with any number of ideas which have ultimately been found to be of such widespread interest that the products have been put into production as "standard" accessories for fork trucks.

Illustrated are some simple, home-made accessories which have increased the utility of trucks, cut down on maintenance, and saved time and space. They may or may not ever be produced in quantity, but there's a good chance one or more of them can be applied in—or further adapted for—operations in other plants or warehouses.

### **BUMPER REDUCES PALLET DAMAGE:**

In Portland, Oregon, The Halley-Gilbert Company has developed a "pallet bumper" to reduce damage to pallets by forks. A study by the firm revealed that most damage occurred as the rounded heels of the forks were driven into the pallet. Metal stops were designed to regulate the depth of fork penetration into the pallet. These simple "pallet bumpers" prevent entry beyond the straight section of the fork arms. Attached to the truck, they have practically eliminated this type of pallet breakage, at almost no cost.

### SPIKES LIFT HEAVY BALES:

A Chicago, Ill., firm, the Aetna Waste Paper Company, simplified its handling of heavy and bulky bales of waste paper simply by welding two spikes on the fork carriage of its lift truck. Despite the simplicity of this addition to the truck, the spikes make it possible for the company to handle baled waste paper and corrugated board from any axis. The spike-equipped truck is saving the firm thousands of dollars every year by enabling it to load freight cars to maximum weights.

Through this simple solution of its material handling problem, Aetna avoided buying a heavier, more expensive truck and a clamp attachment.

### BOOM AND TONGS AS CRANE:

Another Chicago firm, Detroit Mold Engineering Company, found it could use its industrial truck to greater advantage by using a simple boom and tong attachment in place of forks, allowing the trucks to be used as a portable crane for light loading and unloading operations in the plant. The company uses its fork truck primarily for loading heavy dies and crates onto a pick-up truck. The simple attachment eliminates the block and tackle device formerly used to handle the loads. The tongs are designed so that they afford a firm grip, while keeping to a minimum the time required to attach them to the load. This simple attachment eliminates the block and tackle device formerly used for the handling operation. No chains,

slings or pallets are necessary. The job is done quickly and inexpensively, without tying up other needed facilities.

### ELIMINATES PLATFORM SCAFFOLDING:

A fork truck is used to cut maintenance costs at Lamson Corporation, Syracuse, New York. The company attaches a standard scaffold to the forks of the truck. Four "U" bolts hold the scaffold securely to angle irons clamped to the forks. This arrangement is used during the off-shift to service ceiling lights, for piping maintenance and other overhead work.

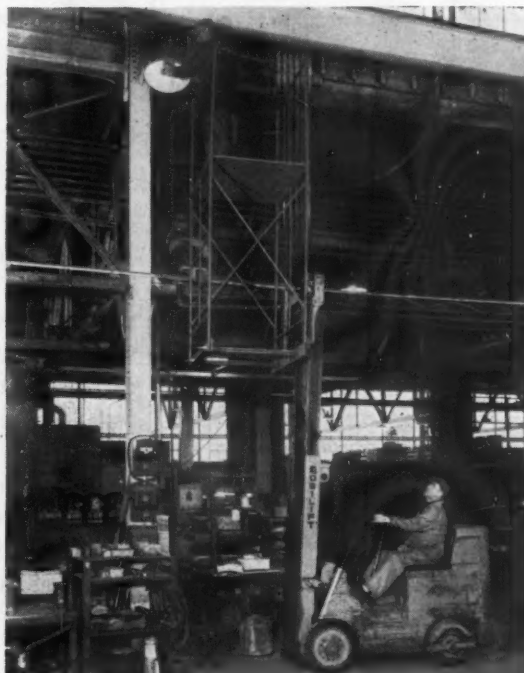
The combination of industrial lift truck and scaffold provides a fast, inexpensive way of reaching the plant ceiling. It eliminates erecting temporary scaffolding or purchase of special equipment for these routine maintenance jobs. The fork truck is not tied up permanently; the scaffold is easily removed when the truck is needed for other handling.

These unique fork truck applications all benefit their firms through a simple modification of the truck. None of them involve changes to the basic vehicle; all require only minor changes of the lift mechanisms. All allow quick conversion back to the manufacturer's original design if required. And in each case they provided the company with the solution to a problem that meant cash savings—savings that can be chalked up to ingenuity.

*Photos courtesy Lamson Mobilift Co.*

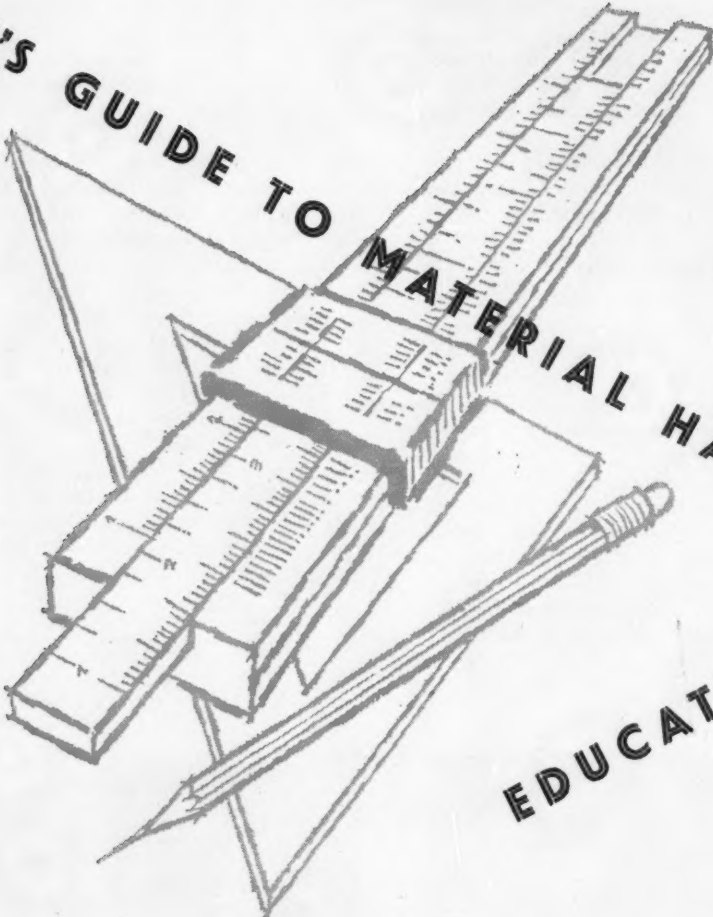


**BOOM AND TONGS** convert fork truck to portable crane used for the loading and unloading of heavy dies.



**SCAFFOLD IS LIFTED** on forks for overhead maintenance; eliminates erecting temporary scaffolding.





# FLOW'S GUIDE TO MATERIAL HANDLING EDUCATION ▲

• As industry continues to find more and increasingly dynamic applications for the principles of Material Handling, a greater need for trained personnel is being developed constantly. As a result of this need, there has been, in recent years, a substantial increase in the number of educational courses offered on the subject—by colleges and universities, trade associations and related institutions. The accompanying list marks the introduction of a new FLOW service, designed to offer readers a complete reference to educational opportunities throughout the United States. This reference will be published periodically, with additions and revisions as they may be required.

*For their assistance in the preparation of this article, FLOW is grateful to The Material Handling Institute's College-Industry Committee on Material Handling Education, and Prof. B. W. Saunders of Cornell Univ.*

## 1957 Reference List of Material Handling Courses

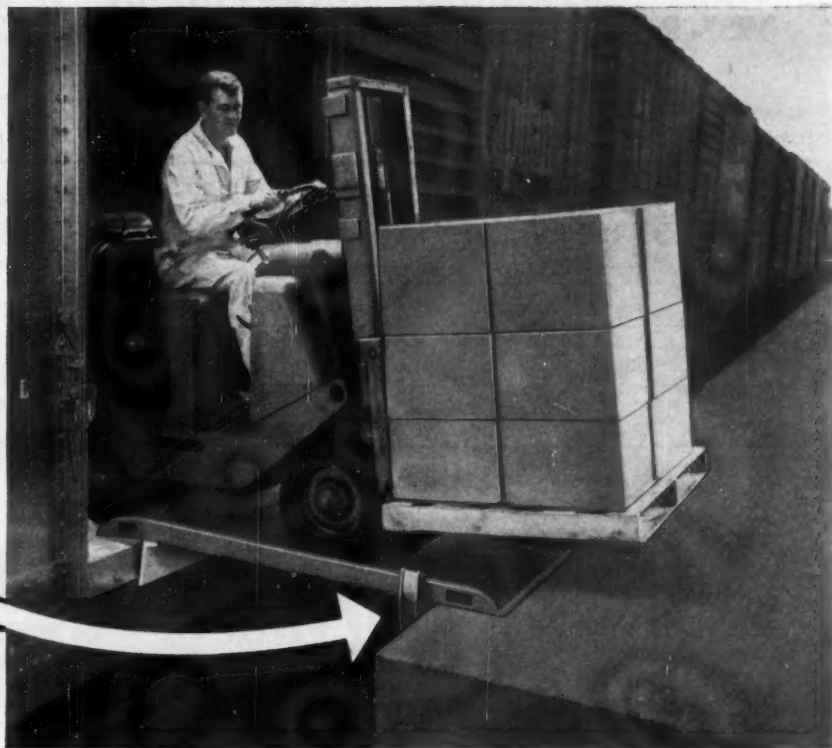
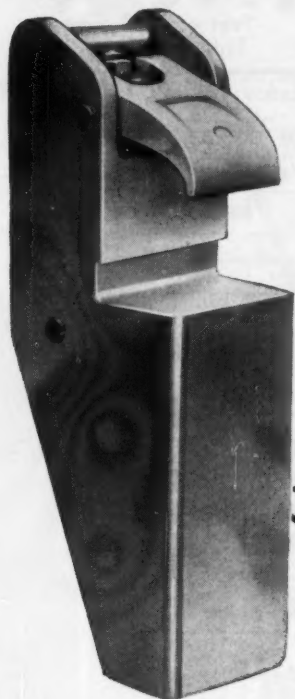
Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrollm't
U. of Akron	Akron, O.	Material Handling	Feb 11	2 hrs, 12 weeks	\$25.00	Yes
Alabama Poly-technic Inst.	Auburn, Ala.	Material Handling	Jan, March & June	5 hrs, 12 weeks	On request	No
American Univ.	Washington, D.C.	Material Handling	Feb & June	1 eve, 16 weeks	\$51.00	Yes
U. of Arkansas	Fayetteville, Ark.	Plant Design and Material Handling	Feb	1 semester	On request	No
Matl. Handling Training Conf.	Lake Placid, N. Y.	Material Handling	June 16-29	2 weeks	\$950.00	Yes
U. of Buffalo	Buffalo, N. Y.	Plant Layout and Material Handling	Feb & June	1 semester	On request	No
U. of Buffalo	Buffalo, N. Y.	Material Handling	Feb	eves, 1 sem	On request	Yes
U. of Calif.	Berkeley, Calif.	Material Handling	Spring	1 semester	On request	No
City College	New York, N. Y.	Plant Layout and Material Handling	Feb & Sept	eves, 16 weeks	\$25.00	Yes
Columbia U.	New York, N. Y.	Plant Layout and Material Handling	Feb 12	1 eve, 14 weeks	\$66.00	Yes
U. of Colorado	Denver, Col.	Plant Layout and Material Handling	Feb & Sept	9 weeks	\$10.00	Yes
Cornell U.	Ithaca, N. Y.	Manufacturing Engineering Seminar	June 12-15	4 days	\$100.00	Yes
Dartmouth College	Hanover, N. H.	Methods Improvement	Spring	4 hrs, 14 weeks	On request	No
U. of Florida	Gainesville, Fla.	Material Handling and Plant Layout	Feb & Sept	4 hrs, 16 weeks	On request	No
General Motors Institute	Flint, Mich.	Material Handling	Mar thru Aug	7 hrs, 12 weeks	On request	No
Georgia Inst. of Technology	Atlanta, Ga.	Material Handling	Jan, March, June & Sept	5 hrs, 10 weeks	On request	No
U. of Houston	Houston, Texas	Material Handling Systems	Jan	3 hrs, 16 weeks	\$48.00	Yes
U. of Illinois	Urbana, Ill.	Plant Layout and Material Handling	Feb & Sept	15 weeks	On request	No
Illinois Inst. of Technology	Chicago, Ill.	Material Handling	Feb 13	1 eve, 16 weeks	\$56.00	Yes
Illinois Inst. of Technology	Chicago, Ill.	Material Handling	Feb & Sept	3 hrs, 17 weeks	\$57.00	Yes
U. of Kansas	Kansas City, Kan.	Conference on Handling	Fall	1 day	\$10.00	Yes
Lafayette College	Easton, Pa.	Plant Layout and Material Handling	Feb 12	4 hrs, 14 weeks	On request	No
Lawrence Inst. of Technology	Detroit, Mich.	Material Handling	Jan	2 hrs, 12 weeks	On request	No
Lawrence Inst. of Technology	Detroit, Mich.	Material Handling	Feb	1 eve, 20 weeks	On request	No
Lincoln Extension Institute	Cleveland, O.	Material Handling	Correspondence Course	Can be completed in 2 months.	\$45.00	Yes
U. of Louisville	Louisville, Ky.	Plant Layout and Material Handling	Jan & Sept	2 hrs, 16 weeks	\$28.00	Yes
Marquette U.	Milwaukee, Wis.	Material Handling Conference	March 18-20	3 days	\$54.00	Yes

## 1957 Reference List of Material Handling Courses (cont'd)

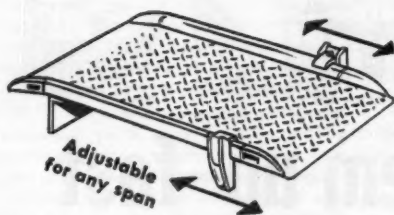
Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrollm't
U. of Minnesota	Minneapolis, Minn.	Material Handling and Packaging	Jan & March	3 hrs, 10 weeks	\$12.00	No
National Metal Trades Assn.	Chicago, Ill.	Material Handling	Oct 10	2 hrs, 10 weeks	\$55.00	Yes
U. of Nebraska	Lincoln, Neb.	Management Eng.	Sept	3 hrs, 15 weeks	\$90.00	Yes
New York City Community Coll.	Brooklyn, N. Y.	Industrial Plant Planning	Feb & Sept	1 semester	On request	No
Northeastern U.	Boston, Mass.	Complete Curriculum Leading to Degree	Jan & Sept	varied	\$40 per Course	Yes
Northwestern U.	Evanston, Ill.	Material Handling	Feb	1 semester	On request	No
Northwestern U.	Chicago, Ill.	Material Handling	Feb 8	1 eve, 16 weeks	\$35.00	Yes
Ohio Mechanics Institute	Cincinnati, O.	Material Handling	Feb	16 weeks	\$24.00	Yes
Ohio State U.	Columbus, O.	Advanced Methods in Material Handling	Jan	12 weeks	On request	No
Oklahoma A & M	Stillwater, Okla.	Factory Planning	Feb	16 weeks	\$84.00	Yes
Pennsylvania State U.	State College, Pa.	Factory Planning	Feb & Sept	5 hrs, 16 weeks	On request	Yes
Pennsylvania State U.	State College, Pa.	Automation	Feb	On request	On request	Yes
Pennsylvania State U.	University Park, Pa.	Engineering Seminar on Automation	June 9-14	6 days	On request	Yes
Pittsburgh Chapter, AMHS	Pittsburgh, Pa.	Workshop Seminar on Material Handling	Jan 17	1 eve	On request	Yes
Purdue U.	Lafayette, Ind.	Plant Layout	Sept	16 weeks	On request	No
Purdue U.	Lafayette, Ind.	Institute for Packaging	Feb 4 to March 1	4 weeks	\$150.00	Yes
Purdue U.	Lafayette, Ind.	Material Handling Conference	Feb 14 & 15	2 days	\$20.00	Yes
Rochester Inst. of Technology	Rochester, N. Y.	Material Handling	Sept	2 hrs, 24 weeks	\$42.00	Yes
Rutgers U.	New Brunswick, N. J.	Plant Layout and Material Handling	Feb	15 weeks	\$33.00	No
Southern Technical Institute	Chamblee, Ga.	Material Handling	Jan, March & Sept	2 hrs, 12 weeks	\$24.50	Yes
Syracuse U.	Syracuse, N. Y.	Material Handling	Sept	3 hrs, 14 weeks	\$75.00	No
Temple U.	Philadelphia, Pa.	Material Handling	Jan 15	1 eve, 14 weeks	\$45.00	Yes
U. of Tennessee	Knoxville, Tenn.	Material Handling	Jan	10 weeks	\$24.00	No
Texas Technological College	Lubbock, Texas	Industrial Plant Design	Feb & Sept	1 semester	On request	No
Toledo U.	Toledo, O.	Material Handling	Feb	1 semester	On request	Yes
Tulane U.	New Orleans, La.	Material Handling	Oct	3 hrs, 16 weeks	\$45.00	Yes
Traffic Managers Institute	New York, N. Y.	Material Handling and Warehousing	Sept	26 weeks	\$100.00	Yes



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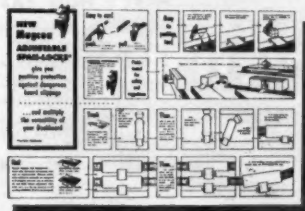
Span-Locks permit you to lock your Dockboard in any desired position . . . even when angle-parking is necessary at your truck dock or when you have a curved-track rail siding. Whether your dock-to-carrier span varies from 3 inches to 63 inches (or more), Span-Locks adjust to your exact needs; to hold the board exactly where you want it.

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DECEMBER, 1956

## 1957 Reference List of Material Handling Courses (cont'd)

Name of Institution	Location	Topics	Starting Dates	Duration	Fees or Tuition	Open to Outside Enrollm't
UCLA	Los Angeles, Calif.	Plant Layout and Material Handling	Feb & Sept	1 semester	\$48.00	No
UCLA	Los Angeles, Calif.	Choice of 4 Courses out of 24 offered.	Jan 21-31	1½ hrs, 10 days	\$350.00	Yes
UCLA	Los Angeles, Calif.	Material Handling	Oct	1 semester	\$18.00	Yes
Virginia Polytechnic Institute	Blacksburg, Va.	Plant Layout and Material Handling	Jan 2	10 hrs, 16 weeks	On request	No
Washington U.	St. Louis, Mo.	Plant Layout and Material Handling	Feb	6 hrs, 15 weeks	On request	No
Washington U.	St. Louis, Mo.	Introduction to Material Handling	Feb	1 eve, 15 weeks	\$40.00	Yes
Washington U.	St. Louis, Mo.	Advanced Material Handling	Feb	1 eve, 15 weeks	\$40.00	Yes
Washington U.	St. Louis, Mo.	Plant Layout and Material Handling	Feb	1 eve, 15 weeks	\$66.00	Yes
Wayne State U.	Detroit, Mich.	4 courses in Material Handling, also many other related courses.	Feb & Sept	each course 2 semesters	\$25.00 per course per semester.	Yes
U. of Wichita	Wichita, Kan.	Plant Layout and Material Handling	Feb	3 hrs, 18 weeks	\$30.00	Yes
U. of Wisconsin	Madison, Wis.	Material Handling	Feb 1	3 hrs, 18 weeks	On request	Yes

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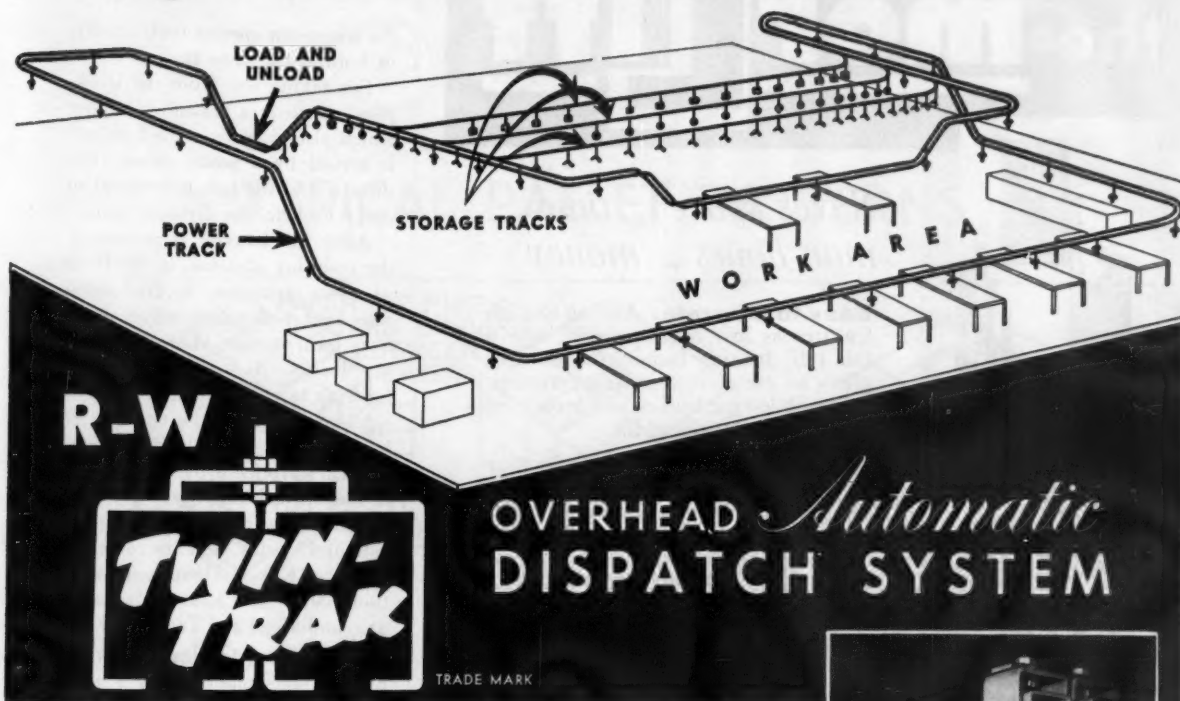
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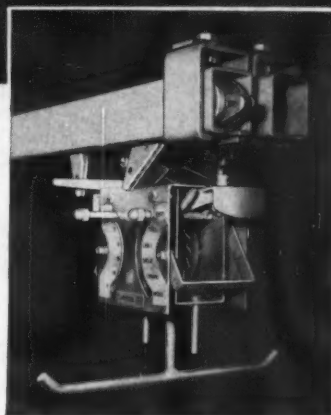
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The unique R-W "TWIN-TRAK" Automatic Dispatch Systems offer a new concept of efficient and economical handling of materials. This system not only moves materials from one point to another but will automatically and economically transfer products to a predetermined work station or storage area. Storage banks may be installed in the "free" area under the building trusses and valuable floor space can be released for production operations. Products may be automatically moved from the storage banks to work stations as they are required.

R-W "TWIN-TRAK" systems, composed of tried and proven standard R-W conveyor component parts, may be economically added to present "Zig-Zag" conveyors. Many conveyors may now be integrated into one automatic, factory-wide conveying system. Call your local R-W Conveying-Engineer today . . . let him show you how an R-W "TWIN-TRAK" System will reduce operating and overhead costs, increase production efficiency and provide added profits.



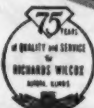
## Outstanding Advantages

- Provides trouble-free, automatic-selective control over product movement through entire plant.
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An R-W "TWIN-TRAK" System consists of one or more power tracks and as many storage or free tracks as desired. Available with efficient, economical manual or electronic selective controls designed to effectively meet your specific requirements.



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**HIGH**  
in performance

**LOW**  
in price

*Saves space...time...  
man hours...money*

**Easy to Operate.** Adding to such features as low overall weight and a full 180° turning radius, the morLift offers an exclusive direction indicator, automobile-type brakes and lever type handles for travel and lift.

**Easy to Maintain.** Time and money saving as well as easy! Built-in battery charger plugs into any convenient outlet. Automatic controls prevent overcharging, and catalyst hydro-caps help maintain a safe water level. Excellent accessibility to all parts.

**Less in Cost.** Tho your morLift comes complete with battery and built-in charger, it costs much less than comparable hydraulic lift trucks. Specifically designed for 1000 and 2000 pound load capacities, the morLift keeps initial costs way down.



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## BULK HANDLING . . .

(Continued from page 76)

the wings can operate individually, or both at the same time.

For taking ore from the stockpiles, there is a traveling hopper which also rides over the belt and is served by a power crane. The direction of the belt is reversed to carry back to the division point.

After the bauxite is processed, the resulting alumina, in the form of white granules, is discharged into bucket elevators which carry it to local storage above the loading tracks. A loading island is built up to car-top height on both sides and between the two sets of tracks, making three loading areas. The cars are filled by chutes from the bins overhead.

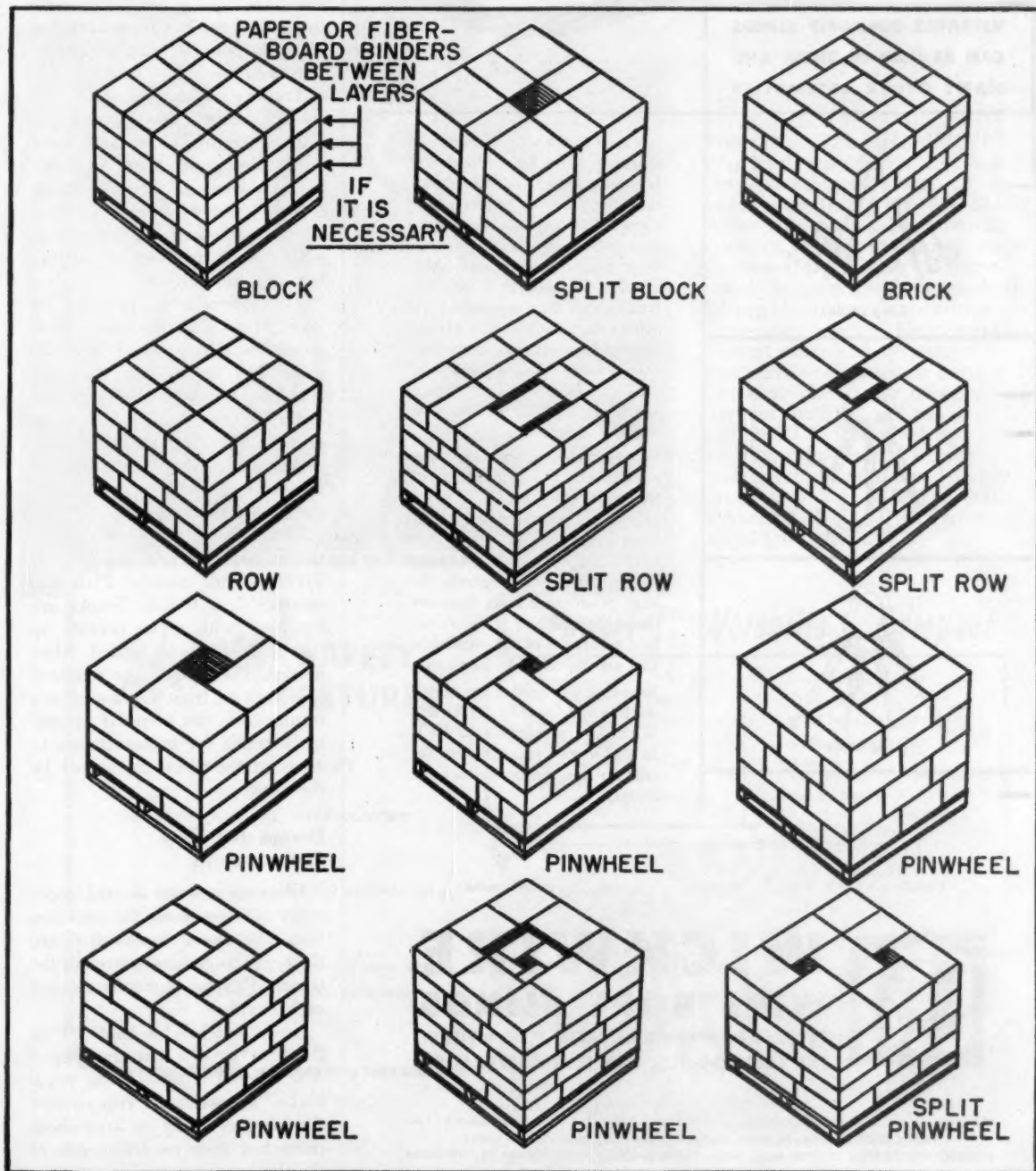
Railroad cars are loaded at the rate of 45 a day, and are routed to the three Kaiser Aluminum reduction plants at Chalmette, Louisiana, and Mead and Tacoma, Wash.

In addition, to alumina for reduction, this plant makes a number of products which require handling by standard types of conveyors and elevators between stages. One is calcined alumina, a very hard white granule inert to chemicals, used for abrasives, porcelain, refractories and electrical insulators. Another is hydrated alumina, which is chemically reactive, used for making catalysts, alums, enamels, frits, glazes and water treating.

Still another is active grade alumina, coarse tan granules ranging in size from 1/4 inch down to 14 mesh, used for absorbing and drying, and for reducing water content of gasses. Pellets are calcined to active grade alumina for making aluminum fluoride.

In addition to bauxite, a number of other basic raw materials are needed to produce alumina. Large quantities of water are required for filtering, washing and cooling. Lime for making caustic solutions is made by burning 100,000 tons of clam shells in a rotary kiln. The lime mud filtered out from the causticizing operation is washed and burned in the rotary kiln. Clam shells are received at the south end of the dock from barges, and are moved to the kiln by belt conveyors.

## TYPICAL PALLET PATTERNS



you get **EXTRA STRENGTH**  
with versatile



**VERSATILE DURAGRIP SLINGS  
CAN BE USED IN THESE AND  
MANY OTHER ASSEMBLIES**



2 leg bridge



3 leg bridge



4 leg bridge

It's easy to see why Wickwire's Duragrip Wire Rope Slings are becoming so popular throughout industry. They're properly designed and they are extra safe because Duragrip Splices are used! This means splices that have 100% of the strength of the rope from which they are made . . . splices that combine the advantages of hand splices and pressed fittings to give double assurance . . . splices free of protruding wire ends which can injure workers' hands.

What's more, there are other reasons why Wickwire Duragrip Slings are so dependable. They're always made from rope and fittings with matched rated capacities . . . made by a company which completely controls its sling production from iron ore through finished sling—your best assurance of the reliability that's so important to sling users. Next time you need slings, check with your nearby, friendly Wickwire representative. He'll be glad to give you complete details on safe, versatile Duragrip Slings.



thimble splice with hook

thimble splice



**WICKWIRE  
WIRE ROPE SLINGS**

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION  
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa  
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane  
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans  
New York • Philadelphia CFI OFFICES IN CANADA: Montreal • Toronto

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## TOW SERVICE . . .

(Continued from page 79)

The system contains several other features designed to improve efficiency of operation. When engaged, the tow-pin rotates if it touches the sides of the floor slot, thereby reducing friction loss. And when the pins are disengaged, they are raised automatically by a spring under five pounds of pressure. The spring action prevents the end of the pin from dragging along the floor, striking an obstruction, and becoming bent.

Trolleys are installed on 20 foot centers. Under normal conditions, a maximum of 175 trucks operate on the line at one time. With this load, there are still about 25 empty trolleys scattered around the loop. These empties enable plant personnel to add loads without waiting too long to hook up.

The towveyor is powered by three 20 hp. electric motors. Each motor, which is rated at 1800 rpm., has an electric shear-pin (load limit switch) that stops the chain in case a truck strikes an obstacle left lying across the conveyor path. Also, there are 38 points along the loop with emergency stop-start cords.

The rubber-tired, plank-bed tow-trucks have a rated capacity of 2,000 pounds apiece. Platforms measure 3 x 6 feet. Trucks are equipped with stake pockets so that sides can be added when needed. The trucks have standard couplings on front and back; as a result, loads can be made up into truck trains for transportation to areas of the plant not served by the conveyor.

## Design for Easy Housekeeping

Cleanout pits are located about every 200 feet along the conveyor line. The chain dumps dirt into these pits as it moves through the trench. Pits are manually cleaned each month.

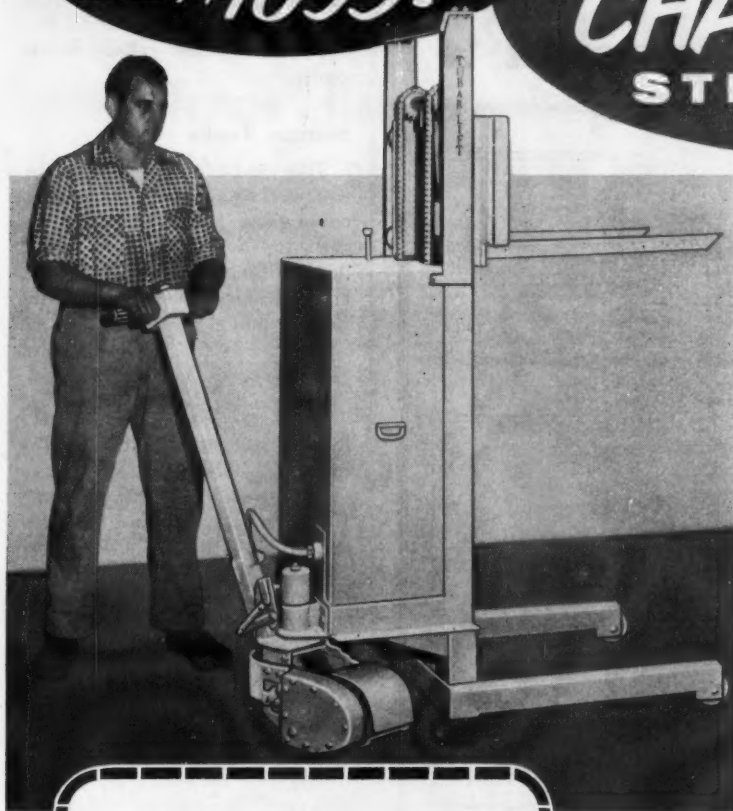
Surface debris is kept out of the floor by a tow truck fitted with special brushes. The truck makes a continuous trip around the loop, sweeping an area about three feet wide on either side of the slot.



**NOW!**

A COMPLETELY  
POWERED  
FORK LIFT TRUCK  
for only **\$1095!**

# THE ALL NEW *Tubar* LIFT **CHAMPION STROLLER**



Here's championship performance at an amazingly low price! The CHAMPION lifts loads up to 1000 lbs.—yet is so compact it can be maneuvered in a six-foot aisle. Automatic push-button handle controls for fast starts and stops ... forward and reverse movement. Rugged steel frame, dual lifting chains, roller bearings, floor-saver wheels. Economical 12-volt electrical system, complete with built-in battery charger. The Tubar name assures quality, and the CHAMPION is backed by Uhrden's traditional 90-day guarantee. Immediate delivery on all orders at \$1095. F.O.B. Dennison, Ohio! Distributor inquiries invited.

## Advanced SAFETY FEATURES

- ★ Self-releasing controls
- ★ Sure-stopping three-position wheel brakes
- ★ Emergency brake for self-locking position
- ★ Handle can't drop—swings up automatically when released

## Powerful... Versatile... Compact

Capacity .....	1000 lbs.	I.D. of Outriggers	24"
Lifting Height ..	60"	O.D. of Forks ..	23½"
Overall Height .....	73½"	I.D. of Forks ..	15½"
Overall Length ..	53"	Length of Forks ...	25"
Overall Width ..	30½"	Maximum	
Height of		Lifting Speed .....	33 ft./min.
Outriggers .....	4½"	Shipping Weight	600 lbs.

*Tubar* LIFT DIVISION  
**uhrden, inc.**  
DENNISON, OHIO  
*Tubar* ASSURES QUALITY

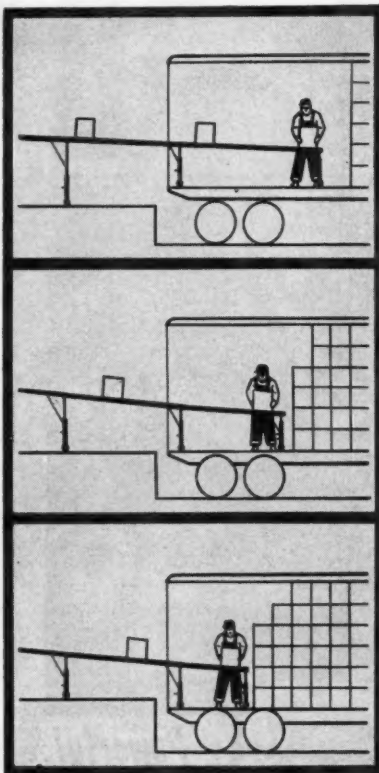
U-1056-71

# NOW...REDUCE LOADING AND UNLOADING TIME BY AS MUCH AS 80%!

## WITH A WILKIE TELESCOPIC CONVEYOR

You can save time . . . save money by using a Wilkie Telescopic Conveyor for loading and unloading. These conveyors "follow the load" . . . are always at the point of operation—with no troublesome, time-consuming adjustments to make. Time savings are so substantial that you can materially reduce the number of men needed to load and unload.

Wilkie Telescopic Conveyors expand to a full 40' or contract to 10'. Just a slight touch adjusts the length. Easy to set up . . . low initial cost. Use the coupon below to get complete information.



**WILKIE**  
**TELESCOPIC**  
**CONVEYORS**  
... cut handling costs!

WILKIE COMPANY  
3520 ARCH STREET  
PHILADELPHIA 39, PA.

Please send me complete information on the new Wilkie Telescopic Conveyor. ☐

I would like to see a scale model demonstration of the new Wilkie Telescopic Conveyor ☐

Name

Company

Street

City  Zone  State

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## LP-GAS . . .

(Continued from page 83)

tions of the ASME unfired pressure vessel code or the API-ASME pressure vessel code. It should also be noted that no liquid storage container shall exceed 30,000 United States gallons in capacity.

### Storage Tanks

The storage tank should be equipped with a manhole, manhole cover plate and sufficient openings to allow for relief valves, liquid filling, compressor suction and discharge—also liquid withdrawal, pump by-pass and vapor withdrawal for possible future plant usage.

**Tank Accessories:** All openings on an LP-Gas container must be equipped with back pressure check valves or excess flow valves. Design and capacity are based on the statement in NFPA Pamphlet 58 which reads "Connections or line, including valves, fittings, etc. shall be protected by an excess flow valve and shall have a greater capacity than the rates of flow of the excess flow valve." With such design, if a break occurs in the gas line, the pressure differential between the storage tank and atmosphere will cause the excess flow valve to close. If the line had a smaller capacity than the excess flow valve, no shut off would occur.

The various valves connected to the openings on the LP-Gas container shall be designed for 400 lb. water, oil, gas service and the globe or angle valves so used should be of material impervious to LP-Gas. Neoprene discs are normally used for this type of service.

Every type LP-Gas container must be provided with one or more safety relief valves and rate of discharge must be in accordance with provisions of Appendix A, NFPA Pamphlet 58. Each relief valve shall be plainly and permanently marked.

**Unloading Equipment:** In the design of LP-Gas systems, consideration must be given to un-

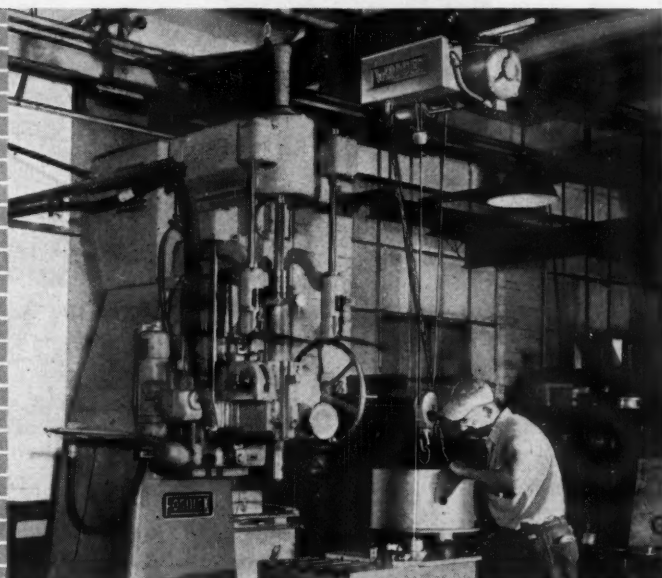
**ACCO**  
products

# The WRIGHT Hoists for Dependability

## NOW! a New 2-Speed WRIGHT Frame 1 Hoist permits precise, gentle positioning of production work

The picture below shows a WRIGHT Frame #1, 2-speed Electric Hoist placing heavy equipment gently on a very precise machine.

This is just one of the applications for which this hoist is particularly well suited.



### CAPACITIES 500 TO 2000 LBS

Compare the flexibility, versatility and dependability of these WRIGHT Hoists with other types of hoists:

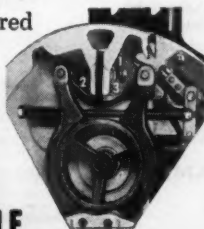
**2 SPEEDS** • A fast lifting and lowering speed—and a slow speed ( $\frac{1}{4}$  the rate of the fast speed) for precise, gentle positioning of work—accomplished by use of 1800/450 RPM motors.

**FLEXIBILITY** • Travel of hoists on rail or jibs is limited only by the availability of electrical service.

**SERVICE AVAILABILITY** • Failure of power source is quickly and easily remedied for individual electric hoists.

**MAINTENANCE** • Very little maintenance required and this is easily handled on WRIGHT hoists.

Brake adjustment on all WRIGHT  
Speedway Electric Hoists is foolproof.  
There is nothing to adjust but the cam!



**ACCO**

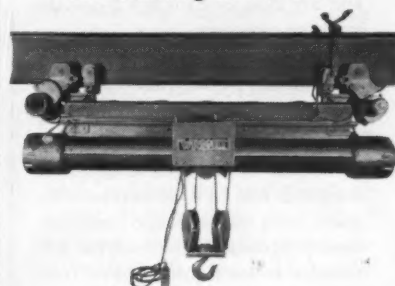
**Wright Hoist Division  
AMERICAN CHAIN & CABLE**



York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York,  
Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

## EXTRA-LONG-LIFT ELECTRIC HOISTS

Single layer of cable  
in machine-grooved drum



3 TON 95 FEET

2 TON 107 FEET

6 TON 115 FEET

1 TON 120 FEET

5 & 10 TON 125 FEET

4 TO 7½ TON 135 FEET

*Write for complete  
information on the  
sensational new  
WRIGHT 2-Speed  
Hoist and the Extra-  
Long-Lift Hoist  
shown above.*

**Better  
Value**



Continued

loading liquid either from tank car or tank truck. An unloading rack, with sight flow glass, check valve and line valves must be installed and adequately protected from possible truck or tank car damage. Liquid and vapor unloading hoses are of material resistant to LP-Gas and are designed for five times the working pressure.

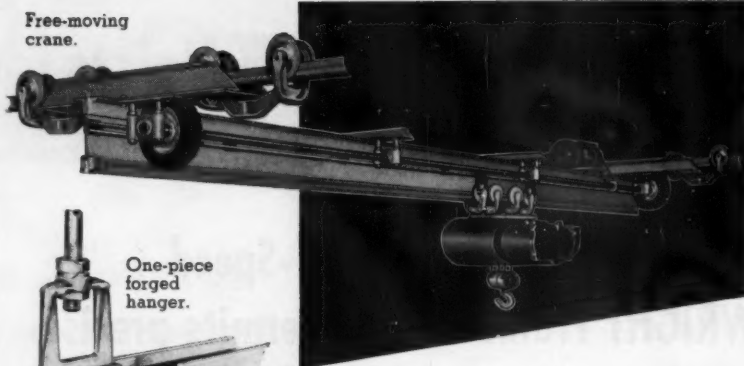
### Unloading Procedure

The generally accepted method for unloading propane tank cars is by means of a vapor compressor designed for LP-Gas service. Vapors from the storage tank are used to pressurize the tank car and thereby cause liquid to flow from the tank car to the storage tank by means of pressure differential. At the completion of the liquid transfer, the flow of vapor through the compressor is reversed and the gas is recovered from the tank car and returned to the storage tank.

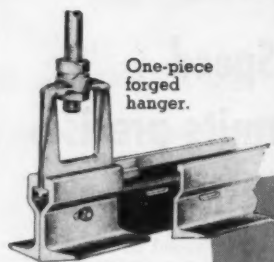
In tank truck unloading, the liquid is normally transferred from the tank truck to the storage tank by means of the liquid transfer pump which is part of the transport equipment. Using this method of unloading, the liquid content of the truck is gauged at the start and at the completion of the liquid transfer and in some cases, a meter record is also incorporated.

**Liquid Transfer Pump:** In order to fill LP-Gas cylinders, a liquid transfer pump is necessary. Various LP-Gas pumps are on the market designed specifically for this type of service and are rated on the number of gallons per minute transferred against various differential pressures. As an example, a  $\frac{3}{4}$  HP motor-driven pump has an actual delivered capacity of 8 gpm of propane at a 40 lb. differential pressure. A  $1\frac{1}{2}$  HP unit will deliver approximately 16 gpm at the 40 lb. differential pressure, while a 3 HP unit will deliver approximately 30 gpm at the same differential pressure. For comparative purposes of time of filling, a standard fork lift truck propane cylinder has a capacity of 33 $\frac{1}{2}$  lbs. of propane, which is equiva-

Free-moving crane.

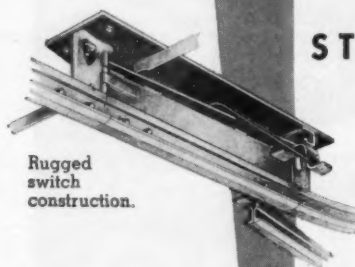


One-piece forged hanger.

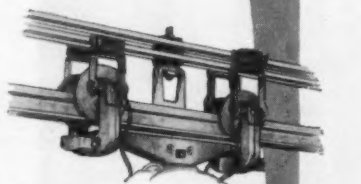


Twin section track.

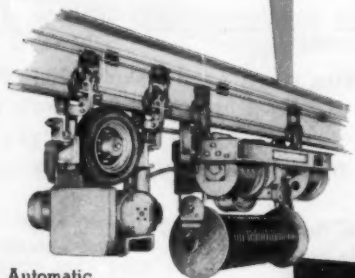
Overlapping splice.



Rugged switch construction.



Compact electrification.



Automatic dispatch carrier.



## TAILOR-MADE SYSTEMS FROM STANDARD PARTS

Standard American Monorail units offering the many advantages illustrated, are combined into systems for handling any type of unit loads.

These systems are available for manual, electric or automatic operation with local or remote control.

Experienced Monorail engineers will tailor-make a cost-saving handling system from standard parts to fit your specific needs.

Write today for Bulletin C-1.



Member of Materials Handling Institute - MonoRail Association

AMERICAN

**MonoRAIL** COMPANY

13129 ATHENS AVENUE • CLEVELAND 7, OHIO  
(IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)

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FLOW



With no manpower involved, Landahl Chainless Conveyors pick up voltage regulator parts, carry them to another station, for discharge to platform conveyor.

At the pick-up station permanent magnets attached to the Landahl trolley grab and carry the parts which are lifted by an air-actuated cylinder from a platform conveyor. All movement synchronized for automatic operation.

This is typical of many ways Landahl Chainless Conveyors are being used to speed production and cut costs.

If you have a similar problem, write us about it today. Send for Bulletin LS-1.



The LANDAHL CONVEYOR CO., 13129 Athens Ave., Cleveland 7, Ohio

A SUBSIDIARY OF THE AMERICAN MONORAIL COMPANY

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DECEMBER 1956

lent to 8 gallons of propane. From this information can be readily ascertained the size of pump required, dependent upon the volume of cylinders required to be filled per day.

The electric motor starter and other electrical equipment related to a pump must be of explosion-proof type, Class 1, Group D design.

#### Cylinder Filling Manifold:

For ease and efficiency of filling cylinders by means of the batch method, a cylinder filling manifold is installed. The automatic cylinder filling device (attached to the scale) will automatically shut off the flow of liquid when the scale beam reaches the predetermined weight. This weight is the total of the empty cylinder plus the weight of product. The manifold usually consists of one or more cylinder filling devices with automatic shut off valve and platform scales, and is usually equipped with automatic cylinder filling shut off valve.

The normal procedure in filling cylinders (using a double-beam scale) is to set the upper beam at the required weight of product which is determined from the size of the cylinder to be filled; and the lower beam scale is set at the net or tare weight of the cylinder. This tare weight is indicated on the cylinder head. When this total weight on the scale is reached, the rising beam will trip the automatic valve, shutting off the flow of liquid to the cylinder.

#### Cylinder Filling

To aid the cylinder filling operator, it might be well at this time to clarify the maximum filling capacity of various size cylinders.

All cylinder manufacturers, complying with ICC Regulations and NFPA, mark cylinders with the waterweight capacity at 60°F. For LP-Gases having a specific gravity at 60°F. of .504 to .510, multiply the water weight by 42% to find the maximum LP-Gas capacity (by weight). For example:

A cylinder of 79.8 lbs. of water capacity will have a maximum propane filling capacity of 33.5 lbs.

For other specific gravity conditions, reference is made to the filling density charts in Pamphlet

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**KEYED TO PRODUCTION!**

# SILENT HOIST LIFTRUK

3-5-6-7 1/2-8

10-12-15

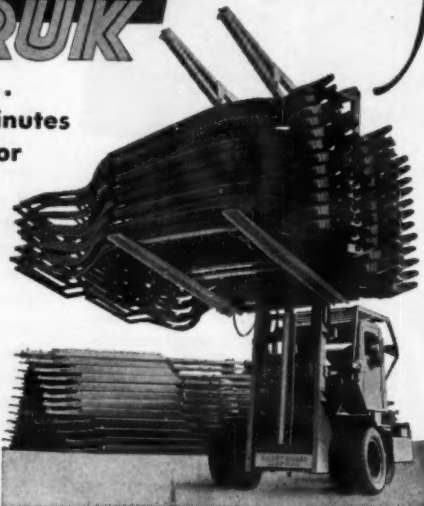
Ton Capacities

FLUID DRIVE  
POWER STEERING

"72 frames per load . . .  
three lifts every four minutes  
. . . proves our needs for  
additional LIFTRUKS"

The SILENT HOIST Heavy-Duty Fork LIFTRUK so rapidly stepped up the production and movement of material, over past handling methods, that this Plant Manager (quoted above), was equally quick to anticipate fleet LIFTRUK operations in their plant. Another example that LIFTRUK pays its way!

Can we aid in solving  
your problems?  
Send for Bulletin #77.



## SILENT HOIST & CRANE CO.

Pioneer Mfrs. of Heavy Duty Materials Handling Equipment  
886 63rd Street, Brooklyn 20, N. Y.

### Knowing the facts . . . you'll choose Neff & Fry Bins

Super-Concrete Staves—virtually as hard and dense as natural stone—comprise the walls of Neff & Fry Bins (silos). The edges are tongued and grooved. The ends are diagonal so that surrounding hoops will impinge directly upon the horizontal joints.

Each stave is 10" wide x 30" long x 2 1/2" thick. Note particularly the thickness. It means a Neff & Fry Bin has great interior capacity in relation to external diameter. It also means a substantial saving of cement compared to that used in thick-walled concrete bins.

Because the staves have crushing strength of up to 8,250 psi, Neff & Fry bins carry heavy superstructures without additional supports—and that can save a large amount of construction cost.

Neff & Fry Bins don't rot, rust, spall, or burn. They never need face-lifting.

And these are just a few of the facts. If you knew them all, you'd certainly choose Neff & Fry Bins when you need facilities for handling and storing any kind of flowable bulk material. Ask us for complete information.

Not exported except to Canada and Mexico.

## THE NEFF & FRY CO.

110 ELM STREET • CAMDEN, OHIO

**SUPER-CONCRETE STAVE STORAGE BINS**



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## LP-GAS

*Continued*

58 or the cylinder manufacturers' data charts.

To sum up, we endeavored to outline the principles, best practices and costs of such LP-Gas storage and dispensing systems in compliance with the latest safety measures.

It would be well for any industrial concern, contemplating a conversion from gasoline to LP-Gas for their lift trucks and other equipment, to employ the services of a company specializing in this work. Such companies are cognizant of the latest rules and regulations regarding LP-Gas Plants and will design, engineer and install a modern and safe plant at a reasonable cost. The authors wish to acknowledge the assistance given in preparing this article by the following: *Grand City Container Corporation, Beam Products Manufacturing Co., Corken's Inc., Bastian-Blessing Company*

### LARGEST RAM TRUCK?

THE largest revolving ram truck ever built was completed recently in the Chicago plant of Automatic Transportation Company. As presently set up, the truck will lift and carry up to 35 tons. With additional counterweighting its capacity can be increased to 50 tons.

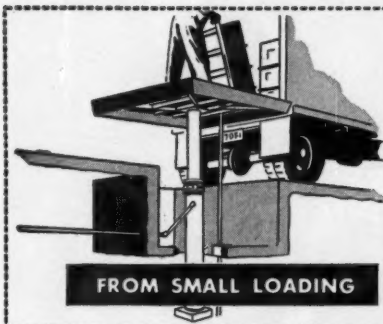
Designed for the transportation and storage of huge steel coils in a Welsh rolling mill, this giant truck has two other unusual features, in addition to its size. Its motorized revolving load ram permits the truck to wind the loose ends of coils as it transports them, eliminating the need for manual winding or steel strapping. Secondly, it is engineered and equipped for the later addition of an attachment which will up-end the coils and stack them vertically. Besides eliminating the expense of a coil up-ending unit, this attachment is so designed as to prevent damage to the ends of the coils.



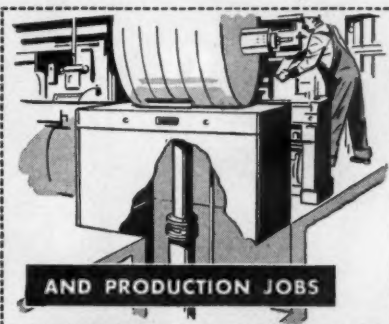
wherever the need...  
whatever the size...

# GLOBE OILIFTS

## QUICKLY INSTALLED...QUICKLY RETURN THEIR COST!



FROM SMALL LOADING



AND PRODUCTION JOBS

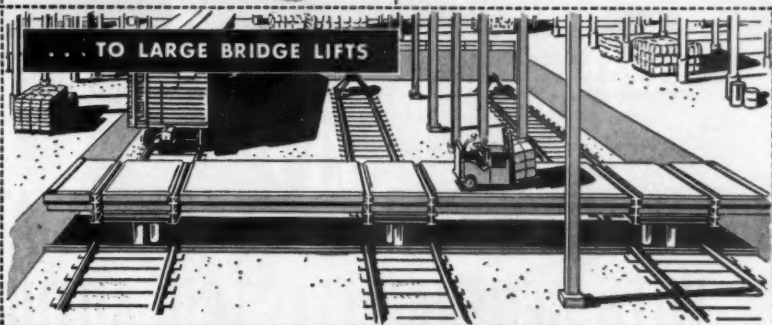
### TO LOAD MACHINES

(Left) Globe OilIFTS position bulky materials to speed production of machines and processes.

### TO CROSS A DEPRESSED AREA

(Below) Synchronized hydraulic cylinders raise giant Globe bridge lifts from railroad track level to loading dock height, permitting two-lane traffic of heavily loaded fork trucks.

**TO LOAD TRUCKS**  
(Above) Where no loading platforms are available, Globe OilIFTS quickly raise heavy loads to truck bed level. In "down" position, platforms are flush with floor, permitting free cross travel of men and vehicles.



... TO LARGE BRIDGE LIFTS

Whether the load is 1,000 lbs., or 50,000 lbs. . . whether the lift is a few inches or 50 ft. . . the Globe OilIFT which does the job is assembled with standard production line components. Oil-hydraulic cylinders, platforms, power units and control systems are available . . . stress and performance tested . . . for initial low cost, early shipment and quick installation.

So, whether you want to cut costs in truck loading, eliminate the hazards of a ramp, route traffic across recessed railroad tracks, or any of countless lifting or materials handling operations, there's a readily-available OilIFT to do the job.

The free book: "Case Studies in Modern Lifting" tells what other firms in your industry are doing to speed lifting work and cut costs. Write for your copy today.

# GLOBE

## OILIFTS

PLANTS: DES MOINES—PHILADELPHIA—LONG BEACH, CAL.



PLATFORM LIFTS ELECTRO LOADERS ELEVATORS TRUCK DUMPS SELF-LEVELING RAMP BASCULE BRIDGE LIFTS VERTICAL BRIDGE LIFTS

Get your  
**FREE COPY** today!



GLOBE HOIST COMPANY  
East Mermaid Lane at Queen Street  
Philadelphia 18, Pennsylvania

Please send me additional information on Globe OilIFTS as described in the FREE booklet "Case Studies in Modern Lifting."

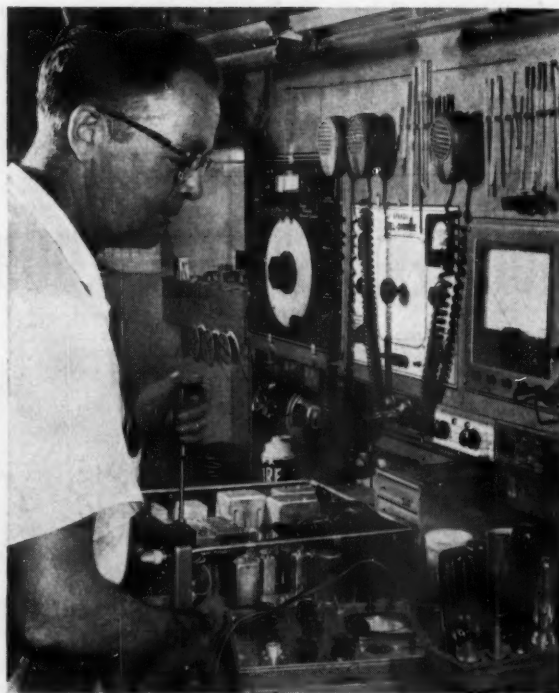
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Company.....  
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City..... State.....

F-705-PL

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**TYPICAL GENERAL ELECTRIC AUTHORIZED SERVICE STATION** is Lane's 2-Way Radio Service in New London, Conn. Owner Al Lane has been in electronics service for over 30 years—now provides maintenance for more than 200 customers' mobile units.



**MOBILE TWO-WAY RADIO SERVICE SHOP**, completely equipped, that Lane uses for fast, efficient servicing on two-way systems. Lane's preventive maintenance program includes monthly checks on all mobile and base station units—of all makes.

## KEEP TWO-WAY RADIO SYSTEMS AT TOP EFFICIENCY WITH GENERAL ELECTRIC AUTHORIZED SERVICE

**General Electric Authorized Service Stations are independent local businessmen, factory-trained to maintain your two-way radio system's full-time operating efficiency at the lowest possible cost.**

Whether you now operate a two-way radio system, or are contemplating the installation of one, it will pay you to investigate the prompt, thorough and economical servicing programs offered by more than 500 General Electric Authorized Service Stations throughout the nation.

Like any investment, a communications system requires planned management to yield a satisfactory return. Such return on your two-way radio system requires planned *maintenance*. General Electric's Authorized Service Stations use experts, factory-trained to provide service that protects your investment by preventing loss of communication.

**Licensed Experts.** To be franchised as a General Electric Authorized Service Station, an independent operator

must be fully licensed by the Federal Communications Commission to perform checks and maintenance on radio communication equipment. He must have the highest reputation in the community for fair dealing and good workmanship, and must carry adequate stocks of factory parts to assure quick repairs in emergencies.



Once franchised, General Electric Authorized Service Stations are enrolled in a continuing program of service training. In addition to factory-training sessions, all stations are regularly supplied with latest maintenance instruction manuals, bulletins, and hints on servicing all makes of two-way radio equipment. Also, General Electric employs highly skilled Communications Engineers in major cities, experts who are immediately available to any independent Authorized Service Station, or customer, for consultation on any communication problem.



**FOR SALES AND SERVICE** see "Radio Communication Equipment" in your Yellow Pages. Or, write: General Electric Co., Communication Equipment, Section X32126, Electronics Park, Syracuse, N. Y. In Canada, write: C.G.E. Electronics, 181 Lansdowne Avenue, Toronto.

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*Progress Is Our Most Important Product*  
**GENERAL  ELECTRIC**







Photo courtesy of Klein Supermarkets, Inc., St. Paul-Minneapolis

## Colored stripes that roll on dry!

Lane marking stripes that simply roll onto the floor . . . are perfectly dry and ready for traffic the minute they're applied. "Scotch" Brand Plastic Tape sticks at a touch to any clean, dry surface. Stripes last up to 2 years; are unaffected by acids, greases, salts, and most commercial solvents; give an overall saving of 30%. Eight easy-to-match colors: red, green, black, orange, blue, yellow, white, brown. Ask your regular tape distributor for further information or send for folder described at right.

Always specify "Scotch" Brand, the quality tape . . . and stick with it!

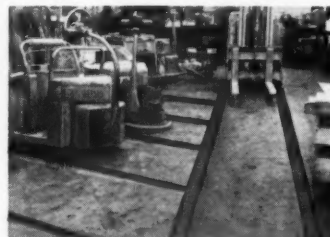
**PLASTIC TAPE . . . one of more than 300 pressure-sensitive tapes  
for industry, trademarked . . .**

REG. U.S. PAT. OFF.  
**SCOTCH**  
BRAND

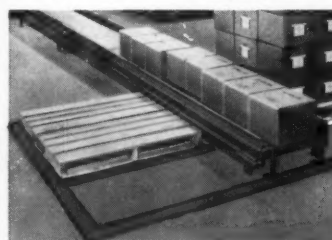
The term "Scotch" is a registered trademark of Minnesota Mining and Manufacturing Co., St. Paul 6, Minn.  
Export Sales Office: 99 Park Avenue, New York 16, N.Y. In Canada: P.O. Box 757, London, Ontario.

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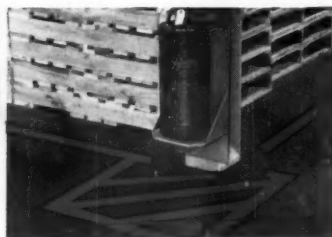
**Look what you  
can do with it!**



**MARK TRAFFIC** lanes, parking areas, etc. for faster, safer traffic movement. No production shut-downs are necessary when floors are marked with "Scotch" Brand Plastic Tape — there's no mess, no drying time.



**STORAGE AREAS** are separated from work zones with markings of "Scotch" Brand Plastic Tape. Eight colors let you code markings for every purpose; floor may be cleaned with usual methods.



**KEEP** fire extinguishers, emergency equipment, etc. in the clear by marking areas with patterns of "Scotch" Brand Plastic Tape. Vivid tape stripes can also mark obstacles, projections, danger points.



**SEND FOR FREE FOLDER** describing properties of "Scotch" Brand Plastic Tape and showing how you can use it in your plant. Just write on your letterhead to 3M Co., St. Paul 6, Minn., Dept. CG-126.





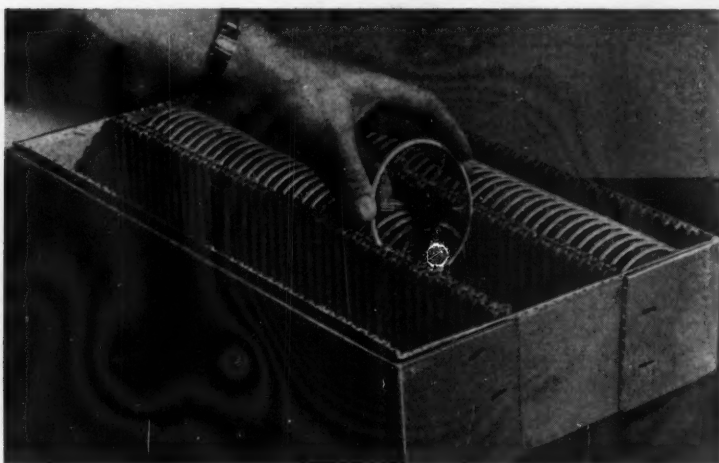
## Double-Duty "File-Box" Shipper

A unique use of corrugated paper is being applied by G. Felsenthal and Sons, Inc., Chicago, to insure damage-free handling of Acrylic automotive clock dials. The new method, which consists of "filing" the dials into slots formed by a corrugated lining in the shipping carton, has virtually eliminated damages and has cut inspection time in half.

Tissue-wrapping the dials individually has been eliminated because dials are kept separated by the corrugations. Not only is time saved at Felsenthal, where the dials are molded, but on the customers'

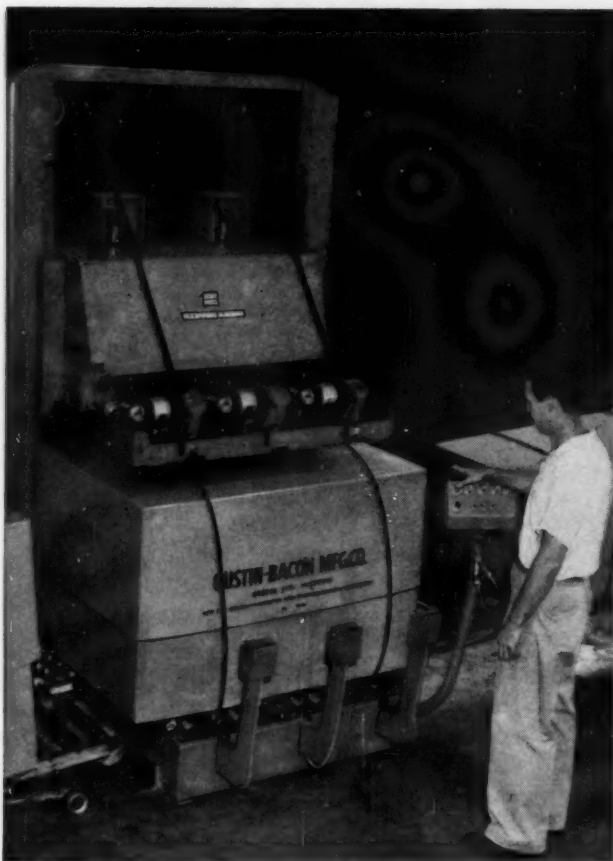
assembly lines as well. For there, the shipping carton becomes a handy tote-tray from which assemblers take parts. Additional protection is afforded the dials by packing several cartons into one case for shipment.

Because dials are held in place by the corrugations, and arrive at the destination in the same condition in which they were shipped, inspection time at both ends has been cut approximately 40%. Rejection of dials because of damage has been reduced 90% by the packaging and handling method.



"FILE BOX" shipping carton, used by clock dial manufacturer, simplifies packaging, cuts inspection time and speeds up assembly at customers' plants as tote tray.

# AIM for packaging



**INSULATION:** Semi-automatic machine applies compression  
—Idea No. S6-3



**BRICK:** Steel strapped brick saves time and labor  
—Idea No. S3-17



**KD BOXES:** Steel strapping makes neat, easily handled bundle  
—Idea No. S2-2



**TRUCK PARTS:** Packages made quickly with steel strapping  
—Idea No. S1-4



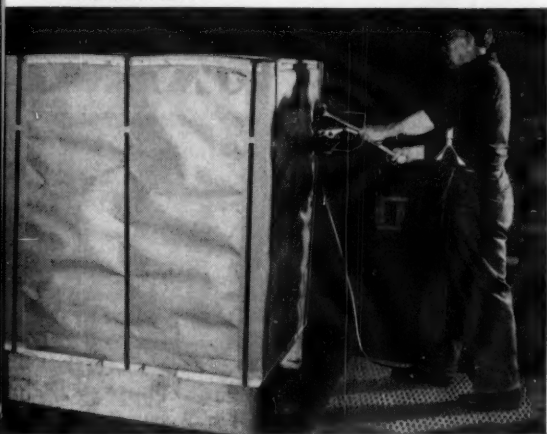
**LUMBER:** Steel strapping speeds handling, reduces damage  
—Idea No. U2-2



# g benefits with ideas-in-action



**MILLWORK:** Steel strapping machine bundles millwork  
—Idea No. S2-7



**PAPER:** Heavy loads steel strapped for secure shipping  
—Idea No. S3-10

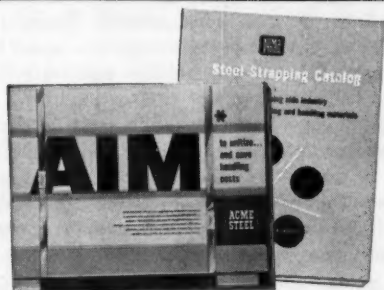
Packaging the Acme Idea way can mean important benefits to you through pleased customers, safe secure packs, protected shipments and labor-material economies. Your \*Acme Idea Man has available for you hundreds of in-use Acme Steel Strapping ideas for better packaging and shipping ... ideas with which others are enjoying dollar-saving benefits.

The Ideas-in-Action on these pages are representative of many available for adaptation and application to your particular packing and shipping operation. Ask your Acme Idea Man to review his Ideas-in-Action files with you. And he's ready to apply his training, experience and steel strapping know-how to your packaging problems without cost or obligation.

Contact your local Acme Idea Man at the nearest Acme Steel office. Look for it under "Steel Strapping" in your classified directory, or send the coupon below for full information.

**ask your \*Acme Idea Man  
about packaging benefits**

**ACME STEEL STEEL STRAPPING**



Valuable free Steel Strapping and Unitizing Books are yours for the asking. Each details dozens of ways Acme Idea Men have pointed out better packing and shipping methods through use of Acme Steel tools, materials and ideas.

Acme Steel Products Division,  
**ACME STEEL COMPANY, Dept. FDS-126,**  
2840 Archer Avenue, Chicago 8, Illinois  
Please send the new Acme Steel ☐ Steel Strapping Catalog ☐ Unitizing Book  
☐ Have an Acme Idea Man call

Name \_\_\_\_\_


Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Circle No. 1 on Reader Service Card for more information



Because of Present  
Ground Handling Methods . . .

**AIR FREIGHT IS TOO SLOW!**

"... our air logistics system has been permitted to lag behind . . . our entire air freight operation needs modernization . . .", declares the Air Force's Chief of packaging and material handling.

**I**N EVERY phase of our daily lives, *TIME* is the important factor. In National security *TIME* is a critical factor—the proper utilization of whatever time is available to us. The time available for offensive and defense action is shrinking because the suddenness with which the enemy can deliver a damaging blow is increasing.

Our national strategy demands that we maintain the capability to launch defensive and offensive strike forces to counter aggression at any place and at any time. This combat capability today, and in the future, can be effective only to the extent that our land, sea, and Air Forces are supported. Therefore, our support forces—or global logistic system—must be reliable and provide the speed, mobility and flexibility so essential to the vitality of our combat forces.

Although all modes of transportation are vital parts of a support system, maximum mobility and flexibility can become a reality only through the use of air transportation. The Air Force objectives are to develop a rapid and flexible air logistics support system in order to provide a wartime capability to:

1. Deploy combat forces and their equipment.
2. Resupply those forces.
3. In both peace and war, realize practical economies (in procurement, packaging, storing, and

distribution which would not be possible if a surface distribution system were relied on as a normal means of transportation.

The attainment of these objectives will result in low stock levels of supplies in forward areas, no "rear-area" stockpiling as in World War II, and a logistics system that will react in "hours".

Today's system, which is geared to the prudent use of airlift, is not serving—and cannot serve—our combat forces because the thinking, planning, development, and procurement have been placed elsewhere,—on aircraft speeds, firepower, passenger comfort, payload,—and other essential items to assure a formidable "air power" posture. Consequently, our air logistics system has been permitted to lag behind.

In rebuttal to the above one might ask:

*Don't we have the MATS fleet of transports which have been carrying passengers and cargo since the early days of WWII and are they not doing a good job? (True! And its capacity has been increased.)*

*Don't we have the newer type transports already coming into our inventory with higher speeds, heavier payloads, and other refinements? (This is true, also.)*

*Don't we have the latest electronic devices for inventory, requisition and distribution of supply information?*

*Don't we have the Civil Reserve Air Fleet which, upon 48 hours notice, can give additional support to our military effort?*

Yes! We have all of these and other wonderful things—and more on the drawing boards. Then, what is the problem?

### System Needs Modernizing

Simply stated, our entire air freight operation needs modernization throughout almost every function from "source to user" in order to provide the rapid distribution of material which is the only justification for the employment of airlift.

We must take off our "blindfolders" in order to broaden our thinking and perspective. We should and must

think of the entire complex distribution field: factory; rail-truck carriers; depots and warehouses; all types of terminals; aircraft; methods and equipment; and most important, the components of packaging and material handling.

Although you and I can readily agree that we have the finest air passenger service in the world—on the ground we have all had some annoying experiences—waiting for baggage and other time-consuming factors. So, the aircraft speed alone is not the answer.

### Paperwork Time Consuming

General Rawlings, Commander of the Air Material Command, has stated that about 80% of our present support cycle—the time between requisition and receipt of supplies—is consumed not in transport but in processing the paperwork and in processing the material itself.

It is our current practice to handle each item off the shelf, through the packaging line, through the shipping facility, through the various modes of transportation, through the air terminals, and on and off the aircraft—one piece at a time. And each handling requires a paper transaction. Obviously, this multiplies the workload and induces the drag. For example: take a shipment of 100 cases which requires 14 handlings in the pipeline. This movement will require 1400 separate handlings and tallies. If this shipment was unitized, then the one load could be taken through the pipeline with only 14 handlings and 14 tallies.

Since it is a basic principle of material handling that the amount of tonnage handled in a given time is in direct proportion to the size of the load, the Air Force, more than a year ago, announced a policy that the unit load would be utilized to the utmost. There should be little doubt that the utilization principal will help in reducing the drag.

And what is the nature and size of our Air Freight Operations? The system includes three different

(Continued on page 126)

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by Colonel Sam P. Triffy  
Chief, Packaging Material Handling Division  
Deputy Chief of Staff, Materiel  
Department of the Air Force

During more than twenty years of Army Air Corps and U. S. Air Force duty as a pilot and in various other assignments in bomber and troop carrier units and staff assignments, Colonel Triffy has had ample opportunity to study our air freight handling methods. His bold attack on obsolescence and complacency in air logistics should be thought-provoking fare for both Government and industrial readers of FLOW.

This article, and the one by W. E. Schirmer which follows, were first presented before the Joint Military-Industry Packaging and Material Handling Symposium, on October 9. Other significant papers from that symposium will be presented in forthcoming issues of FLOW.





# Unitization in Industry



by W. E. Schirmer  
Vice President  
Clark Equipment Co.

The unit load principle has its greatest potential in reducing costs of transporting goods from the manufacturing plant to the customer. This article discusses developments to date and speculates on what is in store for the future.

**T**HE NEXT DECADE in material handling will be regarded as the "Age of Appreciation". History will prove this to be a period when concepts and techniques existing today will be finally grasped and understood in their full importance by both industry and military people. The pioneers in this field will be rewarded for their headaches and heartaches by seeing the acceptance and use of their ideas throughout all industry.

Principles of material handling, which have been established up to the present time, will still apply at this future date. Additional principles will be discovered. Most of today's material handling problems will have been solved, but new problems will constantly arise. Population growth and increased production will continue to present the perpetual problem of reducing material handling costs and increasing distribution of products economically.

Only a few people today understand that time is the raw material of everything. Men, engaged in material handling today, recognize "Time Management" as the true basis of measuring efficiency. As more and more Material Handling practices and

transportation methods are mobilized and freed of the dependency on manual labor, the more those in positions of authority will recognize and use Time Management as the true basis of measuring the management of men, materials, machines, and money.

As we look in the plants and distribution terminals of America's economy today, we find mechanized material handling systems are following the precept of Time Management by moving more materials in the same period of time, thereby achieving the first goal of lower handling costs. Reducing or eliminating product damage is frequently a primary objective of cost reduction—through better handling and packaging techniques.

### Why Unit Load Handling?

The unit load, or handling principle, of material handling simply defines that materials should be handled in the most efficient maximum size unit load. What is a unit load? A unit load is a collection of one or more individual pieces into one mass, with bulk and/or weight which cannot be handled by one man without benefit of a mechanical aid.

Many devices are employed to gain the benefits of unit load handling: pallets, pallet boxes, skids, tote boxes, racks, containers, trailers, baskets—yes, and wheelbarrows are not excluded. But, for the main part, pallets and fork lift trucks are looked upon as the backbone of the unit load system and sometimes these words are used to define unit load handling.

Unit load handling has been put to great use in intra-plant movement of materials. Equipment used to facilitate the assembly of goods into unit loads has been held captive. The unit load principle has been put to use, mainly, only when material arrives on the receiving dock. It receives its greatest application in handling work in process and storage. By and large, thus far, the principle is cast aside at the shipping dock, and the process reverts back to the laborious practice of manual handling.

The unit load principle has its greatest potential yet to be developed in the movement of goods from vendor to customer, producer to user, and it is in this area of activity that the future holds great promise.

Unitization is fairly easily accomplished as long as the equipment remains captive within a particular facility. Complications arise when materials and goods enter the area of movement from producer to user. Then it requires a systems concept which can be used both in the vendor's facility, common carriers used in transportation, and the customer's plant.

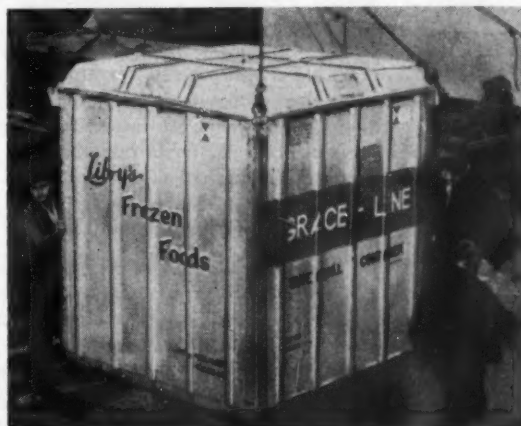
Let us look into some areas of operations where the unit load principle is employed in handling materials from the producer to the user. The automotive companies, led by General Motors and Nash Motors, were among the first to employ the unit load principle in moving parts from the manufacturing plant to the assembly plants. They were able to overcome the barriers of container cost because of the volume of materials, the relatively high cost per ton of material—as compared to other commodities, such as foodstuffs—and the enormous savings in handling

labor. At the first joint military-industry packaging and material handling symposium, held October 10-12, 1955, Mr. W. L. Pierce, Assistant Manager, Parts Distribution, Chevrolet, Flint Manufacturing Division of General Motors Corporation, gave a very comprehensive insight into the application of unit load handling on automotive parts. His very good presentation is recommended reading for the material handling man considering unitization in industry.

Great strides have been made and much has been accomplished in some areas of food processing. For example, on the West Coast, a successful interchange of pallets through a clearing house has been accomplished to permit free use of pallets for moving the fruits and produce from the orchards and fields to the canning plants. Once the canning season is completed, the pallets are sorted and returned to their rightful owners. A small fee is charged for this service. Obviously, for this system to work, the pallets must be all the same size. This has been accomplished through concerted action by all factors in the food processing



ONE OR MORE UNITIZED LOADS can be picked up and transported from one section of a plant to another by fast traveling straddle carriers as illustrated above.



FROZEN FOODS are unitized for shipment in cargo containers which maintain temperatures of 150 degrees F., or lower. Container consists of an aluminum liner, six inches of insulation and an aluminum outer jacket.

## UNITIZATION IN INDUSTRY

*Continued*

business. They have standardized on a 42 x 48 inch pallet size.

In the building trades, some progress has been made in moving materials from suppliers to job sites. While the results have been encouraging and very productive, this field of endeavor still has tremendous possibilities for unit load handling.

A building supplier-manufacturer, U. S. Gypsum Company, through research and development, has demonstrated to their users the great economies available through unit load handling. U. S. Gypsum today has almost 850 special bulkhead flatcars assigned to them for the sole purpose of rapidly moving wall-board products assembled in unit loads to the wholesaler and user. Indeed, one of their officials has remarked that material handling is the only area in which they anticipate making improvement, additional savings and more profits.

The military forces have been very instrumental in promoting unitization of materials and shipping in that form. However, the costs of packaging, specified or suggested by the military forces, do not seem to have been considered. Industry cannot afford some of the specialized packaging and material handling practices exhibited by the military. Economy requires that we do the best job at the lowest price.

Let us divert our thoughts, for the moment, to why more unitization of materials and shipment of those materials in unit load form has not been accomplished. Why does this system stop at the shipping dock? Complete use of the unitization principle in our transportation system has been limited, probably, because of one or more of the following reasons:

### ***Freight charges on the containers used for assembling the unit loads:***

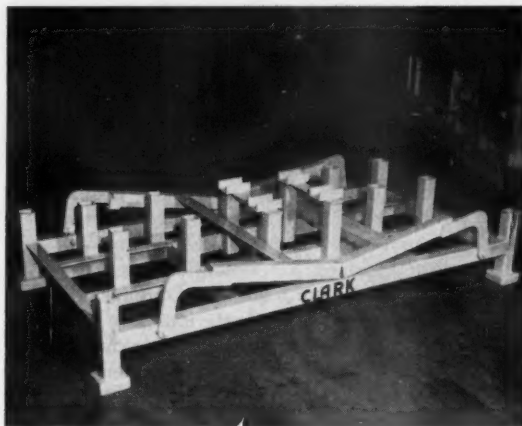
Freight tariffs have probably been the greatest drawback. Very frequently the same freight charge has been applied to the container as to the product it is carrying. Only in recent years, and in limited geographical locations, have special tariff rates been established for containers. Containers should be treated as free dunnage with the limitation, of course, based on maximum permissible weight of the container as compared to the weight mass of the product handled.

### ***The cost of returning the containers, and no assurance the container would be returned:***

Again, in recent years, special tariff rates have been set up on a limited geographical area, although even this liberalization does not permit complete use of unitization but restricts it to those shippers of products which have a high dollar-to-weight ratio.



**BASIC STACKING RACK** is important element in unitization program at Clark. The racks can be decked one on top of the other when they are loaded.



**FOR RETURN TRIPS**, four corner posts on racks can be turned down to conserve carrier space. This rack is special adaptation for handling engine assemblies.

### ***Very frequently the maximum permissible unitizing cost is not sufficient to cover the cost of the minimum unitizing requirements:***

There are being shipped today a number of products that cannot afford more than 1-1/2c per hundred-weight unitizing costs, and yet that amount is not sufficient to provide the minimum requirements to withstand the rigors of transportation by common carrier.

### ***The lack of proper handling equipment at freight interchange terminals has frequently been a road block to shipping in unit loads:***

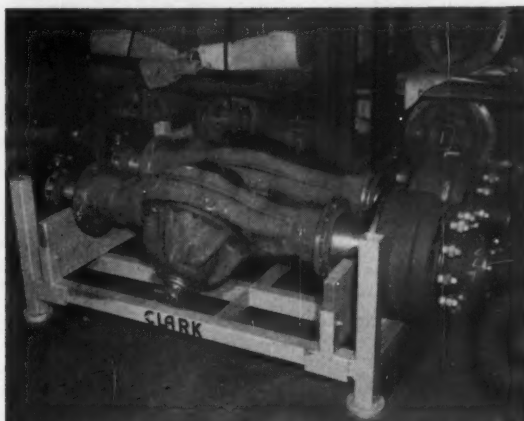
There is nothing more disconcerting than to have products well packaged in a unit load on a pallet and see that unit being handled with pry bars, rollers, wedges, or such similar tools used in manual handling. A trip through some of our ill-equipped freight terminals may also show you unit loads inverted on the dock with pallet resting serenely on top of the



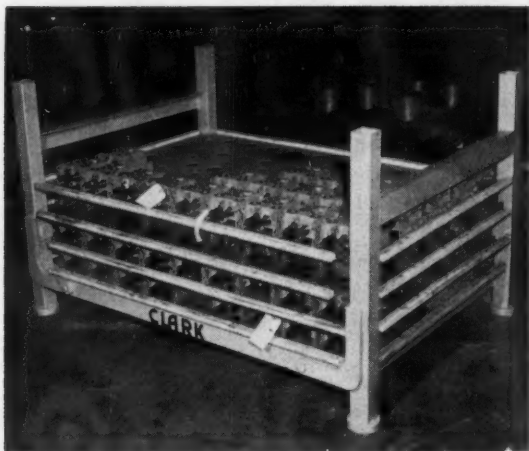
# ... Collapsible stacking racks permit unitization, and cut costs of inter-plant shipping ...



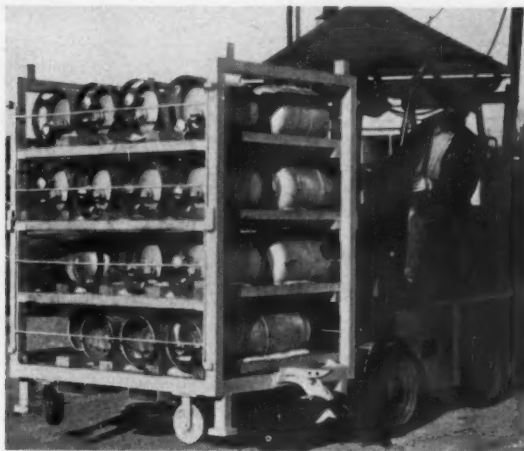
**UNITIZATION OF TRANSMISSIONS** is accomplished through use of basic rack with modifications. It permits carrying 4 transmissions with adequate protection.



**AXLE ASSEMBLIES** are large, heavy and awkward to handle. Simple adaptation of basic rack provides for mechanized handling of two assemblies at a time.



**HYDRAULIC VALVES**, too, are shipped on the racks. Method affords protection against handling by common carrier and permits great economies of unitization.



**CASTER MOUNTED RACK** becomes part of storage operation for LPG tanks. The racks, built to accommodate four sizes of tanks, can be picked up or towed.

material it is supposed to be carrying—yes, and we've seen unit loads of packaged freight disassembled and the pallet thrown to one side in order to handle it one or two cases at a time, simply because of no available equipment.

***Lack of standard-sized containers has been some drawback but not as serious as some of the economic factors involved.***

A complete nation-wide system of shipping and handling materials in unit loads has been held back by

the continued use of old freight cars and cars of variable dimensions, but this is diminishing as new cars are designed and put into service. Most new freight cars and highway trailers now being built will nicely accommodate 40 x 48 inch pallets.

Shipping in unit loads has been limited to those who can ship in carload or truckload lots and do not have to utilize the full cube to meet minimum weight requirements required by tariff rates. In most cases, it has also been limited to those who own their own trucking fleet or own or lease railroad cars. Unit load shipping has been practiced by those shippers

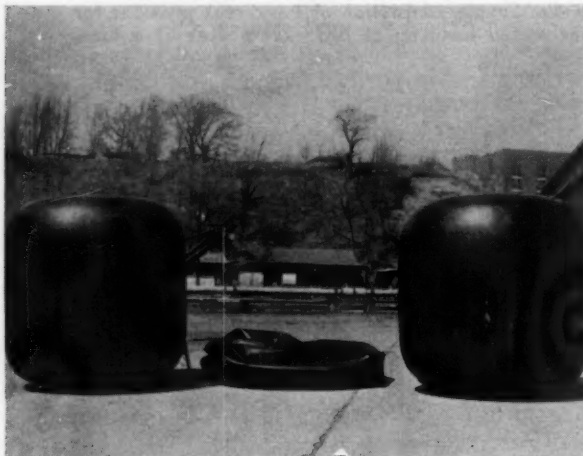
## UNITIZATION IN INDUSTRY

*Continued*

interested in their own costs and not much concerned whether the receiver can unload it in the same fashion—or else by users plagued with such high unloading costs that unit load shipments by the producer was made a condition of the purchase order.

Perhaps you may be interested in some of the unitization we have been able to accomplish within the six plants of the Clark Equipment Company, primarily because we own and operate our own inter-plant truck fleet. Had we been forced to depend on a common carrier, the freight charges on the containers used, and the uncertainty of having them returned, would not have made it economically possible to employ a fairly expensive stacking rack which can be collapsed for return shipment.

We started with a basic stacking rack design.



**GIANT RUBBER BULK CONTAINERS**, available in 70, 300 and 370 cubic foot sizes, may be handled by crane or by fork truck. They prevent contamination and reduce loss of product through sifting or leakage.

These racks can be decked one on top of the other, and the four corner supporting posts can be turned down for nesting purposes when they are returned empty to the supply plant. Figure 2 shows the basic rack adapted for handling three engine assemblies. This method of unitized handling permits moving the engine assemblies directly from the end of the production line in the vendor's supplying plant to the assembly line in our Industrial Truck Manufacturing Plant. Figure 3 shows the engine rack with the supporting posts folded down ready for the return trip. Under the old procedure, each engine had to be handled individually and placed, one at a time, on a pallet, with a quantity of four engines per pallet.

Each individual engine skid had to be collected and returned to the supplier's plant. This job alone presented quite a housekeeping problem. Under the new rack handling system, unloading of engines was speeded up 100 percent, storage is much safer with far less chance for damage to the engine, and the housekeeping problem is considerably reduced.

In one variation the basic rack was adapted for the handling of hydraulic pumps, using the tray pack method. In the old method of unitization, the hydraulic pumps were packed in an egg crate carton with tray pack separators, and the entire unit assembled on an expendable pallet. While this was good packaging, from a unit load standpoint, it did not afford sufficient protection to withstand the rigors of handling by a common carrier. The stacking rack method of unitizing affords more protection to this high cost product, and, while there is a larger possibility of theft, it is more than offset by the savings in damage and utilization of our own trucking fleet.

We were able to use the same rack and the tray pack principle, with hydraulic valves.

We also had a problem of handling and storing transmissions. With the transmission packaging we previously used, we put four transmissions on one pallet as a unit load. While the break-up of unit loads and possible damage to transmissions did not happen frequently, it was still persistent enough for us to desire a 100 percent dependable package. In the method of unitization for transmissions we now follow we use basic racks but this time modified for transmission handling. We still have the four transmissions per unit load and do not have the problem of the unit load becoming disorganized or damaged.

We have also applied the use of racks in unitizing other component parts of our industrial trucks such as sheet metal parts, steering axles, steering gears, large castings or forgings, and forgings which are difficult to stack without benefit of some supporting container.

We have even applied the stacking rack principle to the storage and handling of LPG tanks, most of which are mounted on machines ordered by our customers. We do use some LPG tanks in our own operation, and we use the rack, equipped with wheels, as the delivery system for these LPG tanks. The rack assembly can be handled by a fork lift truck or it can be towed by a tractor. The rack will accommodate four different sizes of LPG tanks, and keep them in the same position as when they are mounted on the truck, as required by insurance regulations.

We have also, in our plants, provided for long-haul operations with fast traveling straddle carriers. These carriers are able to pick up one or more unitized

*(Continued on page 134)*



## Look! No Hands!



A steady stream of packages get strapped—and nobody's there. These Signode machines do it by themselves. Not all plants are ready for such automation, but these machines are ready and are running in several plants. They are one of many Signode ways to make your product cost less to handle, store, ship and receive. For high strength at low cost, you can't beat steel strapping to hold things together or in place. It will pay you to see your Signode representative. No obligation. Just write:

### **SIGNODE STEEL STRAPPING CO.**

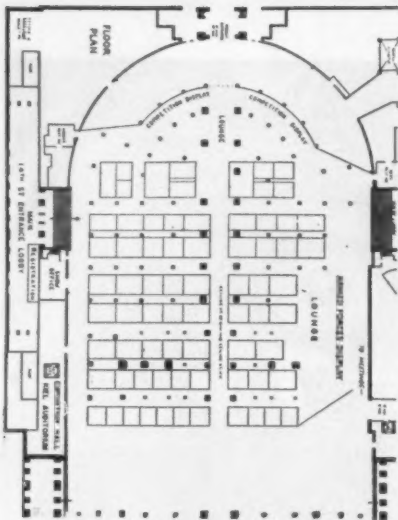
2618 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-wide.

In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Circle No. 125 on Reader Service Card for more information





# SIPMHE Show Report

Here's your opportunity to attend the 11th National Protective Packaging and Material Handling Exposition—even though it is over. During the exposition, October 22-25, FLOW Editors visited most of the exhibits, interviewing representatives of each firm. For more information on any of the items described in these brief items circle the appropriate number on the reader service card.

## Stitches Without Clincher

The Acme Steel Box Stitcher closes tops and bottoms of corrugated fibre boxes quickly and securely without the use of a clincher. Using low-cost wire, drawn from a continuous-length, 10 or 25-pound coil, it fastens outer flaps securely to the inner flaps with strong self-clinching Circuate stitches. It closes tops and bottoms of filled boxes manually, semi-automatically or fully automatically.

*Acme Steel Products Division  
Acme Steel Co.*

Circle 304 on Reader Service Card

## Molded Excelsior Pads

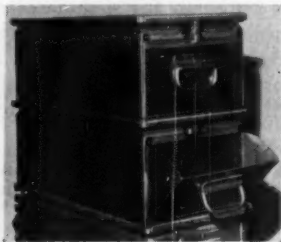
Moldex is an unusual way to use excelsior for cushioning purposes. It is made from a new type wood-fibre material bonded with a neutral adhesive. Densities can be varied to meet any packaging requirement. The material can be molded to fit the product.

*American Excelsior Corp.*

Circle 305 on Reader Service Card

## Two-Way Tote Box

A fold-down hopper front permits this tote box to be used as a closed stacking box when the hopper is closed

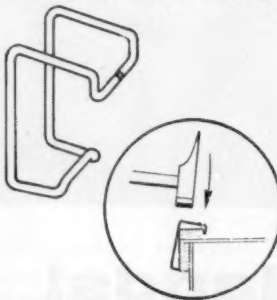


and as a hopper box when it is open. Because of its unique design it has a stacking ledge on all four sides even when the front is open. The box is available in any gauge steel and can be made to open to any degree up to slightly less than 90-degrees.

*All American Steel Products Div., of  
All American Radiator Cover Co.*  
Circle 306 on Reader Service Card

## Introducing—The "Klimp"

The "Klimp" is a spring clamp, formed from 8½ gauge tempered-steel wire, and intended for securing top and



bottom panels on cleated boxes. It snaps into place with a single blow of a hammer and can be pried loose quickly with a claw hammer or similar tool.

*Atlas Plywood Corp.*

Circle 307 on Reader Service Card

## Ultra-Compact Pallet Trucks

The Model WP Transporter measures only 21½ inches, plus load length, yet it has a standard 8¾-inch battery compartment. The ultra-compact design

reduces aisle space requirements and makes for easier maneuvering in tight quarters. Exclusive new features simplify operation and maintenance, reduce down costs and cut costs in many ways.

*Automatic Transportation Co.*  
Circle 308 on Reader Service Card

## "Balanced Design" Fork Trucks

All Baker trucks, gas or electric powered, now feature "balanced design". All elements are coordinated to work together for top efficiency, maximum dependability and long life. The entire power package, consisting of engine, transmission, clutch and drive axle are coupled into an integral unit. Available in capacities from 2000 to 7000 pounds.

*Baker-Raulang Co.*  
Circle 309 on Reader Service Card

## Low-Cost Molded Cushioning

Tekmold is a rigid, form-fitted molded pulp packaging material which is said to provide cushioned protective packaging at "paper prices". The material is available in any shape to suit whatever product you ship. It is molded to fit the product (there are no separate mold charges).

*Bemis Bro. Bag Co.,  
Tekmold Products Plant*  
Circle 310 on Reader Service Card

## "Cradle" For Your Product

Blocksom Paratex is said to cradle your product to assure shockproof security. It provides the natural resilience

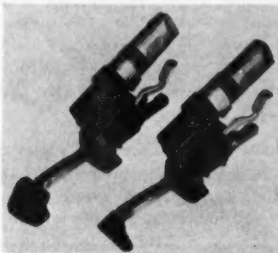
of latex rubber with the spring-like action of curled hair. It can be die-cut or molded to fit any shape and can be designed with the right density to provide required shock protection for your product.

*Blocksom & Co.*

Circle 311 on Reader Service Card

#### Pneumatic Stretchers for Odd Shapes

The PNKX (left) and the PNK (right) stretchers are pneumatic



stretchers for use with  $\frac{5}{8}$  and  $\frac{3}{4}$ -inch strapping. The PNK is for round or odd shaped packages and the PNKX is for boxes, crates and pallets. Both air-powered tools provide predetermined tension.

*Brainard Steel Div.,  
Sharon Steel Corp.*

Circle 312 on Reader Service Card

#### High-Capacity Batteries

C & D Five-Fold Slyver-Clad Batteries are said to give full-shift operation from electric trucks. Slyver-Clad construction consists of; (A) Slyver-parallel glass fibres to hold active material in place; (B) glass expansion mat which allows for normal plate expansion and holds Slyver in place; (C) glass expansion mat which allows additional space for plate expansion and covers vertical plate edges; (D) perforated koroseal retainer which encases plate and insulates sides and bottom; (E) microporous rubber separators.

*C & D Batteries, Inc.*

Circle 313 on Reader Service Card

#### Easy to Use Interior Packing

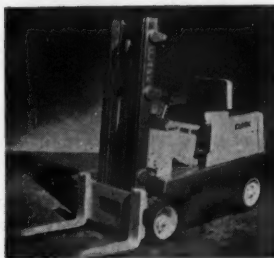
Celotex Industrial Cane Fiber Board has built-in physical properties that fit it to packaging of a great variety of products. Made from long, tough Louisiana cane fibers, the board is both strong and uniquely resilient. Because it imparts rigidity to the entire pack, it is often possible to reduce packaging costs by down-grading to a lighter or less costly outer container.

*The Celotex Corp.*

Circle 314 on Reader Service Card

#### Easy-To-Operate Trucks

Operator comfort, safety, easy maintenance and interchangeability of parts



are the outstanding features of the Clarklift line of fork trucks. Available in capacities from 2000 to 5000 pounds, the trucks are similar, in many ways, to modern automobiles, having fully automatic transmission, unobstructed floor-board, four-inch adjustable foam rubber seat with self-adjusting swivel back, extra-wide brake pedal and totally enclosed self-adjusting hydraulic brakes. Operating controls are conveniently located on the steering post.

*Clark Equipment Co.*

Circle 315 on Reader Service Card

#### Paper Cans and Tubing

Containers in an almost limitless variety of shapes and sizes, of quality fibreboard bodies, providing rigidity and strength for specific requirements.

*The Cleveland Container Co.*

Circle 316 on Reader Service Card

#### "Tap-Touch" Stapling

Carton tops and bottoms can be closed simultaneously from the outside by completely mechanical means with the Model CSC-2 "Automagic Tap-Touch Stapler." Various size cartons can be stapled without adjustment.

*Container Stapling Corp.*

Circle 317 on Reader Service Card

#### Fibre Drum for Liquids

The Liquipak is a fibre drum for use in shipping liquids and semi-liquids. It features a liquid-tight bottom crimp, heavy duty electro-galvanized top and bottom chimes, vinyl-coated metal cover and a protective polyethylene sleeve heat-sealed over the top metal chime.

*Continental Can Co.*

Circle 318 on Reader Service Card

#### Portable Desiccant Container

Cooper's Portable Desiccant Container is divided into four sections each with air tight hinged lid equipped with hygrometer and marine lock. A master lock is provided for locking the four sections as a unit. It is divided into 10 compartments for handling every size bag from five grams to five pounds, and one compartment to handle humidity indicators. A portable electric

drying lamp is supplied for drying the air in the opened compartment before resealing.

*D. C. Cooper Co.*

Circle 319 on Reader Service Card

#### Spare Parts Shipper

Custom-engineered cabinets make it possible for spare parts to travel in complete safety and at surprisingly low cost to the point of use. Easy and quick access to each individual part is provided for, by the cabinets, to avoid delays in making repairs.

*Craig Systems, Inc.*

Circle 320 on Reader Service Card

#### Positive Rust Prevention

Cromwell Ferro-Pak is claimed to be a new-improved volatile rust inhibitor



paper. It provides complete protection against corrosion for ferrous metal parts and products. A product is wrapped in a matter of seconds (there is no need for oil or grease coatings) and unwrapped, ready for use, just as rapidly.

*Cromwell Paper Co.*

Circle 321 on Reader Service Card

#### Plug Type Humidity Indicator

The Culligan Metal "Plug" Indicator is an externally mounted window hu-



midity indicator for determining relative humidity within rigid metal containers. It is highly visible, fast acting, re-usable and is permanently calibrated. The indicator requires no reactivation or refilling. It has modified  $\frac{1}{8}$ -inch National Standard straight pipe threads for easy installation in drums or other containers.

*Culligan, Inc.*

Circle 322 on Reader Service Card

#### Metal Conveyor Belts

Labor savings, production increases and generally reduced costs are said

*(More on next page)*

## SHOW REPORT

*Continued*

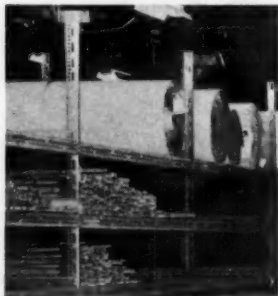
to result from the use of metal conveyor belts. They are useful for a wide variety of processes and products, providing an efficient, economical means of continuous product processing and conveying. The belts are relatively unaffected by heat, steam, water, changes in temperature or any of the usual causes of conveyor belt trouble.

*Cyclone Fence Dept., American Steel & Wire Div.*

**Circle 323 on Reader Service Card**

### Do-It-Yourself Racks

All you need is a wrench and a Dexion Cutter to transform Dexion precision-made, cold rolled, galvanized steel angle into practical, useful, economical



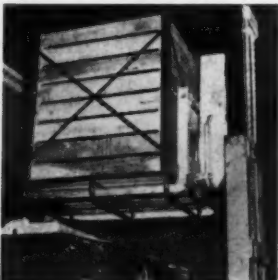
equipment used almost anywhere in the plant, warehouse, store or office. Scientifically spaced slots and holes make it easy to produce an infinite variety of structures. To make the job of assembly fast and easy, Dexion has diamond-shaped cutting marks accurately spaced three inches apart to assure proper measuring and cutting.

*Dexion Division, Acme Steel Co.*

**Circle 324 on Reader Service Card**

### Steel Bound Potato Box

Until now, the potato chip industry has fallen short of being completely automated in one area of handling—just prior to processing. A new potato box which promises to give automation all the way from the field to the finished product is constructed with an angle



iron frame, sled runners and hard wood sides and bottom. The boxes are taken out to the field for conveyor loading directly onto the delivery truck. At the processing plant, they are removed by fork truck and dumped directly into machines. No in-between containers are needed. Only two bolts hold the entire unit together.

*Econoweld Corp.*

**Circle 325 on Reader Service Card**

### Storage Batteries In Industry

A booklet designed to introduce science and engineering students to the industrial applications of Edison Nickel-Iron-Alkaline Storage Batteries was distributed by Thomas A. Edison, Inc. It includes a glossary of storage battery terms, history of batteries, roundup of present-day uses, and a trip through the Edison factory. Virtually an informal education in storage batteries.

*Edison Storage Battery Div.  
Thomas A. Edison, Inc.*

**Circle 326 on Reader Service Card**

### New Type of Edge-Cushioning

Zipfast spring edging offers possibilities for greater protection in shipping and handling articles with sharp or breakable edges. It has an inner construction of waffle paper and padded spring wire that makes it grip edges firmly. Because it is highly flexible it can be shaped to a variety of edges . . . square corners, round corners and curved edges.

*Flex-O-Lators, Inc.*

**Circle 327 on Reader Service Card**

### Powered Strap Dispenser

Model 5150 Electric Powered Strap Dispenser is for use with  $\frac{3}{4}$ ,  $1\frac{1}{4}$  and 2-inch strapping. It dispenses at the rate of five feet per second, 36 inches above floor level. The dispenser is equipped with a brake and permits recoiling strapping to control more closely the cut length of a band.

*Gerrard Steel Strapping Div.,  
United States Steel Corp.*

**Circle 328 on Reader Service Card**

### Standardized Wirebounds

Now you can buy standardized wire-bound pallet boxes for handling, storing and shipping industrial bulk loads. Four sizes of re-usable, heavy-duty pallet boxes with cleats on the outside are available in regular or open front form.



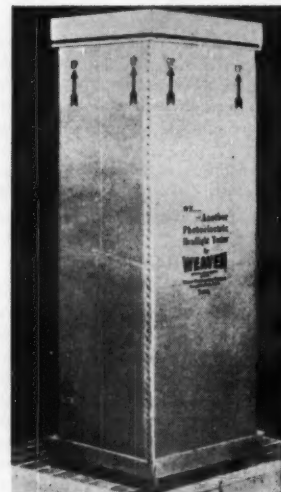
Easily assembled and knocked-down for return in shipping operations, they can handle loads of 2000 to 3000 pounds and are easily stacked when necessary. An economical, one-time shipper is also available for handling loads up to 1500 pounds.

*General Box Co.*

**Circle 329 on Reader Service Card**

### Bulk Shippers

Increased product protection, better handling and increased speeds of packaging are important benefits said to be



gained from the use of the Gaylord bulk container. It consists of a corrugated body and two corrugated caps held in position by steel strapping placed in pre-cut slots. Plus-benefits include dust-proofness and smooth sides on which attractive advertising messages may be printed.

*Gaylord Container Corp.,  
Div. of Crown Zellerbach Corp.*

**Circle 330 on Reader Service Card**

### Improved Industrial Battery

Three developments are said to be responsible for the success of the Gould "Thirty" Industrial Truck Battery. They are: (1) Diamond "Z" Positive Plates with heavy grid members of uniform size and solid all the way through; (2) Regenerative Oxide that renews and replenishes itself throughout battery life; (3) Glass tape insulation wound vertically around each plate to form a virtually indestructible sheath of even





thickness. A self-leveling sediment bridge eliminates possibility of shorts by preventing build-up of sediment.

*Gould-National Batteries, Inc.*

**Circle 331 on Reader Service Card**

#### **Solvent Free Tapes**

Blue Cross pressure sensitive tapes now feature solvent-free adhesives. Adhesion is said to remain constant over longer periods of time, and shelf life of the tape is increased.

*Hampton Mfg. Co.*

**Circle 332 on Reader Service Card**

#### **Automatic Battery Chargers**

Single-Circuit Motor Generators for electric truck batteries featuring: (1) automatic control of the charging rate; (2) automatic cut-off of the battery when fully charged; (3) automatic shut-down when the charge is completed; (4) automatic shutdown in case of power failure; (5) automatic restart when power is resumed.

*Hobart Mfg. Co.*

**Circle 333 on Reader Service Card**

#### **Easily Installed Tape Printer**

You can code-mark tape dispensed from Ideal tape dispensers by using



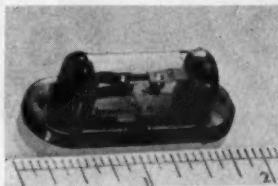
Ideal's handy printing attachment. It permits you to identify contents, identify packer, date packages, or print any necessary sales message or instructions. The printer is easily installed and type changes can be made in a jiffy.

*Ideal Stencil Machine Co.*

**Circle 334 on Reader Service Card**

#### **Tiniest Shock Indicator Yet**

The Latco shock indicator is a French invention which has been licensed to Impact-O-Graph Corp. and Testing Ma-



chines, Inc. It weighs but  $\frac{1}{8}$ -ounce and has dimensions of  $1\frac{1}{2}$ " x  $\frac{5}{8}$ ". It provides a visible indication of a shock equal to, or in excess of, a predetermined maximum. Four springs are mounted in pairs on a plastic base with a steel ball mounted in each pair. Tension of the springs is adjusted so that a ball is released only when a predetermined "g" value is made from a centrifuge. The indicator may be attached to the container or to the contained product. It is low enough in price to be considered expendable once it has experienced a shock great enough to release one of the steel balls.

*Impact-O-Graph Corp.*

**Circle 335 on Reader Service Card**

#### **Semi-Automatic Wire Tying Unit**

The model 1200 semi-automatic wire tying machine is now available for use



in conjunction with 500-pound "Pay-off Pak" drums. Formerly, the tying wire was only available in 50-pound coils. A special dispenser is provided to give easy-flow and kink-free operation. Normal tying rate of the machine is between 15 and 20 ties per minute. It is electrically operated and can be used on any bundle size.

*Inland Wire Products Co.*

**Circle 336 on Reader Service Card**

#### **Hand Model Vacuum Lifter**

Touch the International Air-Lift Hand Model Vacuum Lifter to the flat surface of an object and it is ready for lifting instantly. A vacuum is created when the Air-Lift is placed on the object, and a press of a button permits air to rush in for easy release. Recommended for lifting and moving sheet metal, glass, plastics, castings, plywood, asbestos sheets, plaster board and other bulky, hard to handle materials.

*International Staple and Machine Co.,  
Material Handling Division.*

**Circle 337 on Reader Service Card**

#### **One-Hand Clincher**

Balanced design, elimination of heavy castings and simplified construction have all been combined to make the Inter-



national One-Hand Clincher a truly practical one-hand stapler. Because of its compactness, it will fit into tight quarters and can be used for stapling all sorts of unusual shapes. Using the retractable anvil method of closing cartons from the outside, after they are filled, the clincher features: simplified driving linkage; adjustable penetration control; positive-tension staple pusher; one-piece magazine and support; two piece anvil.

*International Staple & Machine Co.*

**Circle 338 on Reader Service Card**

#### **Bags for Interior Packaging**

Jiffy padded shipping bags are now being used as interior packaging. They provide cushioning and interior suspension for products like fluorescent lamps, glass products, grinding wheels, etc. Individually packed in Jiffy Bags, the fragile items are protected from damage in transit. Contents of a carton are immobilized and held suspended in the bags within the carton. Unpacking is rapid and clean.

*Jiffy Mfg. Co.*

**Circle 339 on Reader Service Card**

#### **Cold Seal Papers**

Cohesive coated papers for cold sealing in any fin-seal machine . . . . No modification of the machine is necessary to use the paper—just turn off the heat. The paper is non-toxic and neutral (with a pH of 7). The adhesive used is a stabilized latex coating. Strength of seal is in direct proportion to the area of the seal and amount of pressure exerted. Papers are low cost, trouble free—no temperature to worry about—and speed of operation of the machine is no longer restricted by necessary dwell time, etc.

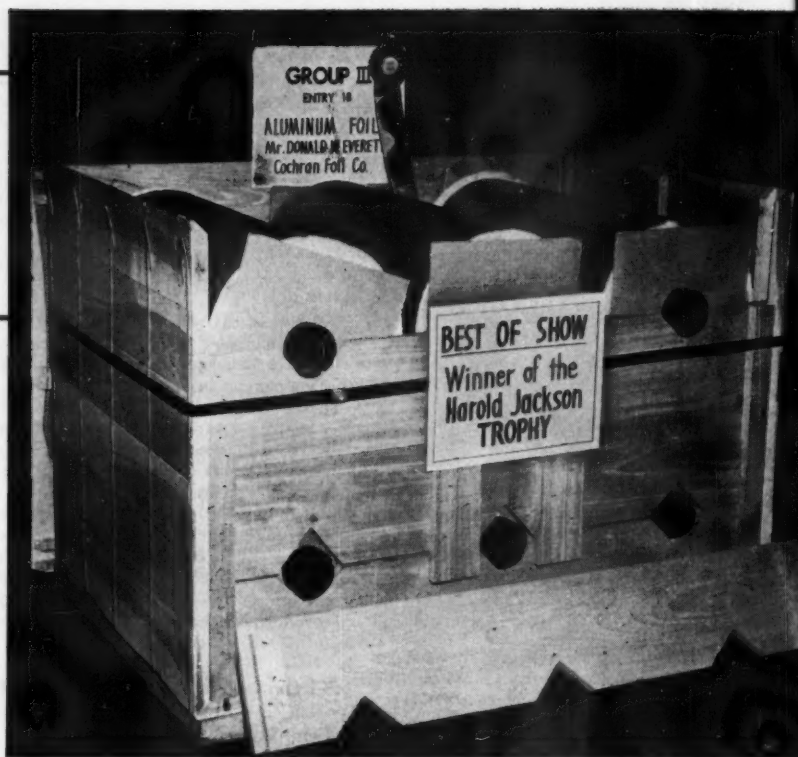
*Kimberly-Clark Corp.*

**Circle 340 on Reader Service Card**

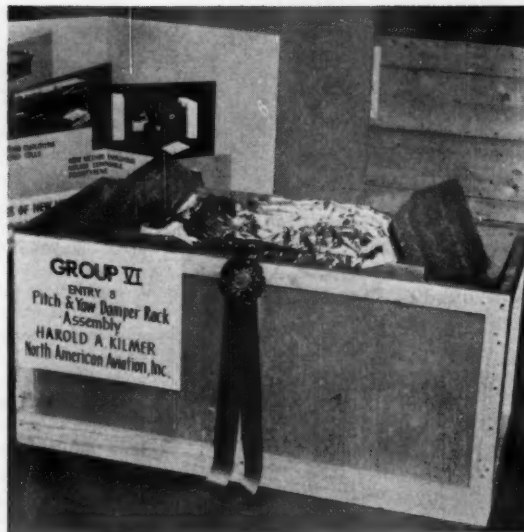
*(Continued on page 144)*

## Best of Show

**WIREBOUND BOX** for shipping aluminum foil rolls won "Best of Show" award for Donald W. Everett, Cochran Foil Co. The box has simplified difficult handling-unloading problems, eliminated damage complaints and saved 50 percent of packaging costs. The package consists of wood sectional ends notched to accommodate either six or eight rolls of aluminum foil. Materials used in the package were supplied by General Box Co.



**PORTABLE TV PACKAGE** was awarded first prize in Group I (Corrugated or Solid Fibre) for its simplicity, economy, ease of packing and ease of unpacking. The package replaced a costlier and more complicated method and resulted in 28 percent reduction in material costs and a 33 percent saving in labor costs. Design permits dealers to insert antenna without opening the container prior to delivery. The box was supplied to Admiral by Knox Box Div., Highland Box Co.



**INTERIOR PACKING** was an outstanding feature of winning entry in Group VI (Export Packages) entered by Harold A. Kilmer, North American Aviation, Inc. Item is a Pitch and Yaw Damper Rack Assembly. Chief advantages include: 66% reduction in dunnage weight; 25% reduction in amount of desiccant required; 22% reduction in packing time. Suppliers include: Zant & Assoc.; Armour & Co.; Coast Hardboard Co.; Noland Paper Co.; Davison Chemical Corp. and Filtrol Corp.

# The Best Packaging Ideas of the Year

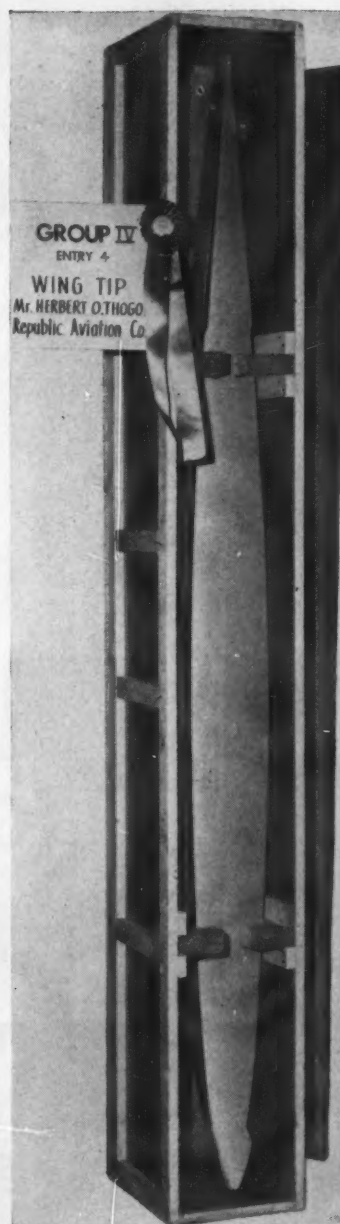
... First Prize winners in  
SIPMHE National Championship Competition

**N**EARLY 150 entries, in seven different classifications, made this year's National Championship Competition in Packaging and Material Handling the biggest and most dramatic in the 11-year history of the event which is sponsored by the Society of Industrial Packaging and Material Handling Engineers. Although entries were made in the names of individual engineers, the firms represented read like a "Who's Who in American Industry", ranging from at least one small "one-man" organization to giants such as General Motors, Chrysler, General Electric, Westinghouse, North American Aviation, and Radio Corp. of America.

Cash prizes, ribbons and certificates were awarded to the top three entries in each classification and a "Best of Show" award, The Harold Jackson Trophy, went to the entry which, in the opinion of the judges, was the outstanding among the seven First Prize winners. That award is given annually by the Wm. H. McGee Co., Inc. in the name of its president. Illustrated on these pages are the First Prize winners in each of the seven categories. Included with each is a brief description of the entry and factors which influenced the judges' decisions.



**CIRCUIT BREAKER-CONDENSER BUSHING** is packed in Nailed Wooden crate for both export and domestic shipment. Entered by Henry H. Kelly, Westinghouse Electric Corp., it was adjudged the top entry in Group II (Nailed Wooden Boxes and Crates). Among the advantages which influenced the judges' decision were: (1) reduction of 31% in packing and delivery costs; (2) elimination of fire hazard which was present in old method when sawdust was used as interior packing; (3) elimination of sawdust inventory and storage expense; and (4) elimination of customers' sawdust disposition costs. Total shipping weight is about 1290 pounds.



**WING TIP PACKAGE** was awarded first prize in Group IV (Cleated Panel Boxes). Entered by Herbert O. Thogode, Republic Aviation Corp., the package has eliminated damage claims, knocked off 35% of packing time and 17.5% of materials cost. Gross weight and cube were greatly reduced and packing and unpacking of the wing tip have been simplified. Suppliers of the package and materials are: Tri Wall Containers, Inc., Viking Criterion Paper Corp., and M.&M. Lumber Corp.

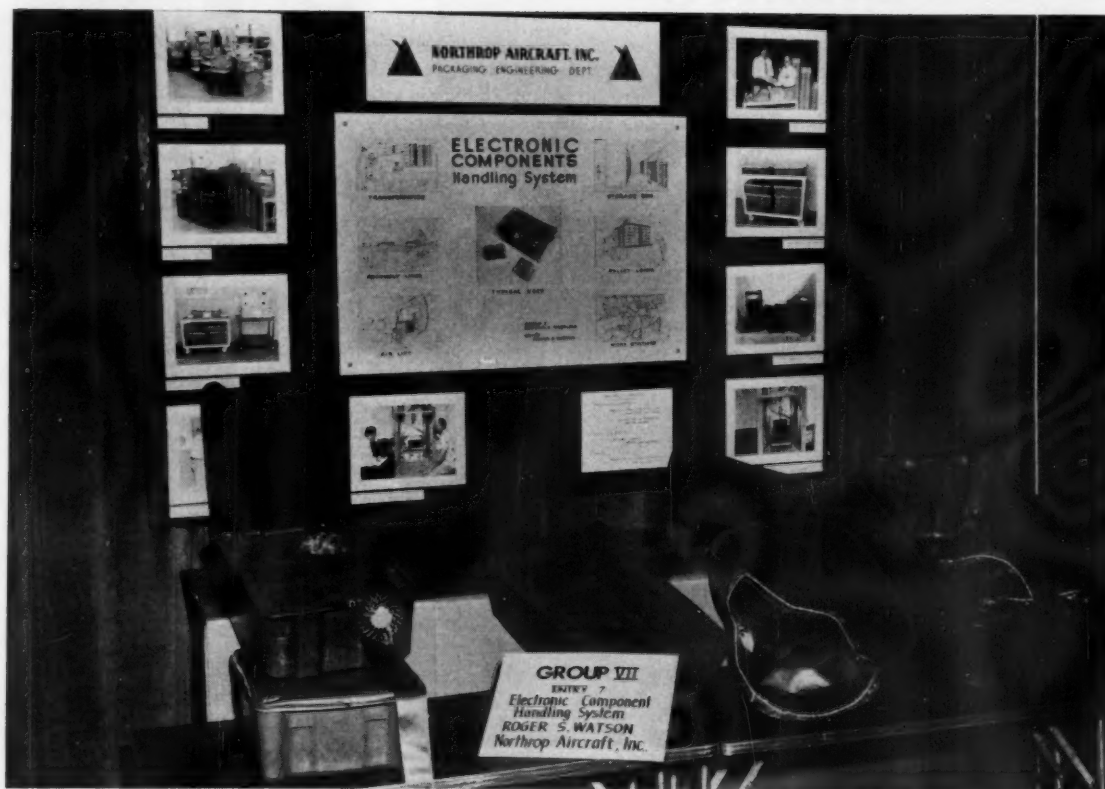


## THE BEST PACKAGING IDEAS . . .

*Continued*



RESUABLE DRUM for a Hydraulic pump was first-prize winning entry of W. E. Christopherson, Douglas Aircraft Co., Inc. It was judged best in Group V (General) because it: reduced labor and material cost from \$11.16 to \$7.95; is easy to pack and to unpack; meets requirements for long-term storage as well as rough handling. A military unit, the pump is packed and preserved per specification MIL-P-116, Method IA5. It is treated internally with MIL-C-6529 preservative and bare metal surfaces are coated with MIL-C-11796A, Class 3, preservative and wrapped in barrier material conforming to JAN-B-121, Grade A, and pad blocks. Supplier of the metal drum is Geo. B. Woodcock Co.



**ELECTRONIC COMPONENT HANDLING SYSTEM**, consisting of moulded fiberglass reinforced plastic tote box in three sizes and three colors, removable polyurethane cushion inserts, pads, or multiple cavities fabricated to fit boxes, and flexible polyethylene covers was entered by Roger S. Watson, Northrop Aircraft Co. It was awarded first prize in Group VII (Material

Handling). The system has reduced costs 92.14% and provides for easier and more economical storage. Suppliers of materials include: G. B. Lewis Co. (tote box); American Latex Products Co. and General Tire and Rubber Co. (polyurethane cushioning) Magnesium Co. of America, Tobey Aluminum Div. (casted carts).



## How Comet Tape's new built-in wetting agent saves time, money

The COMET name on this roll is more than a trade-mark — it's a built-in wetting agent — a brand new idea in tape! The trade-mark instantly dissolves in water, instantly activates the glue along every inch of tape . . . instantly prepares it to grab and hold with a minimum of sealing pressure. You get extra-fast, dust-tight closures every time . . . and *no wetting agent to mix and measure.*

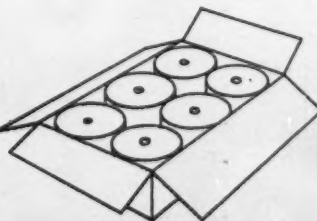
COMET's new cost-cutting, built-in agent means important maintenance savings too — contains a special conditioner that adds months to brush life . . . *plus* a fungicide that keeps your dispenser reservoir clean and odor-free.

**FREE SAMPLE** and facts — write McLaurin-Angier Co., Needham Heights 94, Massachusetts.

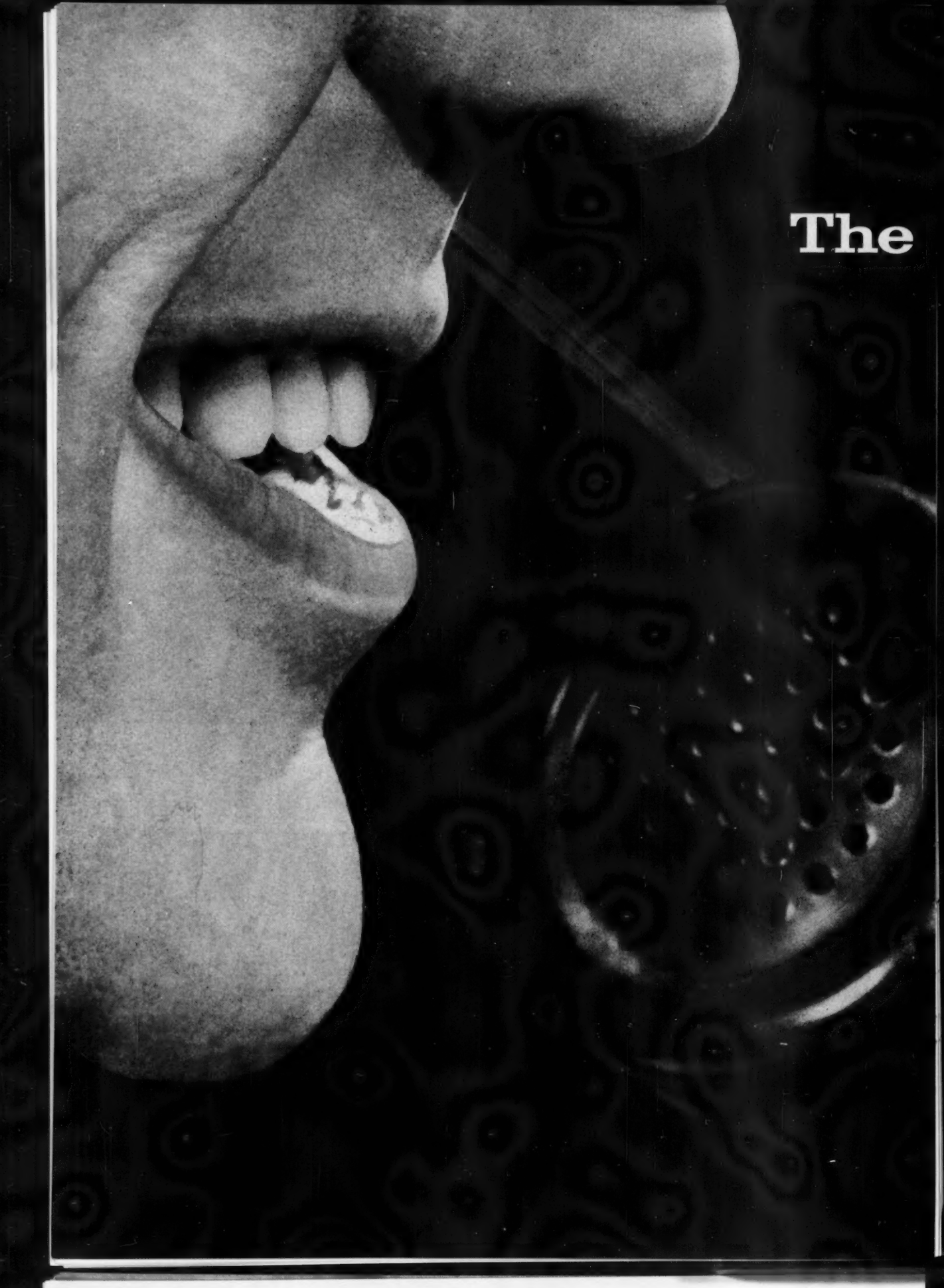
*or circle reply card 88*

The new ideas in tape are coming from **COMET**..

Superstandard; Rayon-reinforced Snake Tape—asphalt or blond;  
Sol-Seal waterproofed—standard or rayon-reinforced.



Only Comet has the new, moisture-proof **STORE-MORE** carton! Holds more, stacks taller, and keeps tape crush-proof too!

A high-contrast, black and white photograph of a person's face in profile, showing their teeth and a metal strapping device. The image is grainy and has a dramatic, almost sculptural quality. The person's mouth is open, revealing their teeth. A metal strapping device, likely a Stanley Steel Strapping, is visible in the lower right corner, partially obscuring the person's face. The background is dark and textured.

**The**

**STANLEY STEEL STRAPPING**



# e Man from St. Regis says:

"It's an amazing new concept in packaging...the  
**FLUOPACKER FILLING MACHINE**"

Available in 1 to 4-tube models, the Fluopacker Filling Machine packs powdery and granular materials alike at high speeds, with accurate weights, into smaller, cleaner bags.

The secret is Fluidizing . . . an exclusive process that sends low pressure air (1-3 psi) through a canvas air pad to the bottom of the supply bin. Once material is "fluidized" it flows out through filling tube due to the difference in "pressure head" between bin and bag.

Here are some of the ways that the Fluopacker Filling Machine gives you easier, more economical packaging:

**EASIER, FASTER OPERATION AND HANDLING** . . . automatic controls fill up to 20 bags a minute . . . bags are easier to handle, palletize and transport—help you make more efficient use of warehouse.

**BAG COST SAVINGS** . . . Aeration of the product by *fluidizing* actually is less than by conventional filling methods—results in denser product, smaller bag sizes.

**DUST-FREE OPERATION** . . . Dust leakage around the filling tube is prevented by use of an expandable rubber seal between the valve of the bag and filling tube . . . danger of toxic or silicosis hazards are minimized.

Four-tube Fluopacker Filling Machine at G. & W. H. Corson's Plymouth Meeting, Pa. plant accurately weighs and packs 50-pound valve bags at rates up to 18 per minute. Corson reports "the Fluopacker Filling Machine enables us to cut bag size the equivalent of three inches in length, gives us a better package and saves money!"

## **St. Regis** **PAPER O COMPANY**

*Behind the Man from St. Regis stand experts in every field of packaging, ready to serve you.*



Multiwall Packaging Division  
**St. Regis Paper Company, Dept. FLO-1256**  
150 East 42nd Street  
New York 17, N. Y.

Please send me free illustrated booklet on the Fluopacker Filling Machine.

Name \_\_\_\_\_ Title \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Circle 123 on Reader Service Card

**NOW** manufacturers large and small can im-

# STANLEY STEEL STRAPPING Would results like this interest YOU?

Traffic Manager reports:

**"\$35,000  
Annual  
Savings  
in Packaging"**



by using

## **STANLEY STEEL STRAPPING**

The Stanley ACE Steel Strapping Tool is used to apply Stanley Steel Strapping in packaging Duriron Corrosion Resisting Pipe for safe shipment all over the world.

"A matter of cost" is the reason given by C. A. Armentrout, Traffic Manager of the Duriron Company, Inc., Dayton, Ohio for switching to THE STANLEY STEEL STRAPPING SYSTEM in packaging Duriron Pipe and other products. Estimated savings of \$35,000 a year stem from these results:

Lower shipping costs through lighter packages made possible by the elimination of wooden crates.  
Minimized breakage and reduced damage claims through better product protection . . . and more careful treatment because handlers can see the product.

*Interested in similar results and savings?  
Mail coupon below . . . TODAY.*



**INSURE IT — SECURE IT WITH STANLEY STEEL STRAPPING**

### **STANLEY STEEL STRAPPING DIVISION OF THE STANLEY WORKS**

Stanley Steel Strapping Division, Dept. L, 593 Lake St., New Britain, Conn.  
Telephone: BAldwin 9-2021

☐ Please send Catalog SS-9C.

☐ Please have Representative call.

NAME \_\_\_\_\_  
POSITION \_\_\_\_\_  
COMPANY \_\_\_\_\_  
CO. ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_



Stanley Tools • Stanley Hardware • Stanley Electric Tools • Stanley Steel Strapping • Stanley Steel

Circle No. 129 on Reader Service Card for more information

**AIR FREIGHT . . .**

(Continued from page 109)

type operations: The AMC Logair is a closed circuit operation linking the depots with the MATS aerial ports. The aircraft and crews are civilian contractor operated and AMC provides all of the ground support. The most pressing problem is the arduous and time-consuming reconstitution of the airplane loads at every stop.

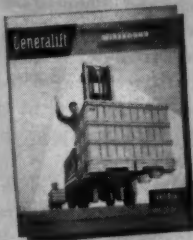
The MATS organization is the inter-theater, "point to point", operation between the United States and overseas major terminals. MATS is a combat arm, the same as SAC, TAC and others—because in case of emergency—only MATS will be available to do the job. While the CRAF fleet is vitally needed during the emergency period, only a small portion of it can be available and ready within a week—because of the delay in recalling crews and aircraft from commercial runs and repositioning and outfittings for military runs. MATS will be alone in the first few days or weeks of a grave national emergency, and yet, today, it is suffering all of the ills of poor documentation, consolidation problems, inadequate handling equipment and terminals.

### **Troop Carrier Units**

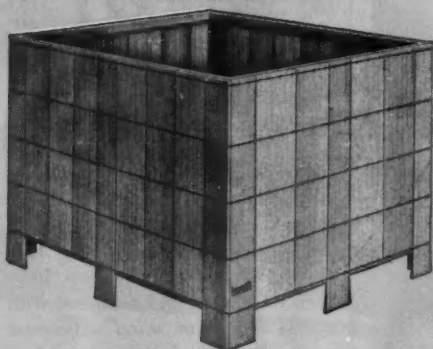
The European and Far East theaters utilize troop carrier units for air freight operations. These units have other missions of aerial delivery, organizational moves, etc. This is an unhealthy situation because of inadequate facilities, equipment, personnel, and insufficient capability to meet requirements. Thus, streamlining of air freight operations is critical in this case. This is a large size operation, and I haven't even mentioned the Alaskan and Caribbean theaters, and Greenland, Labrador and Iceland.

So, this is the nature of our global operations in which MATS alone exercises over 110,000 miles of air channels. And, in the "aching-back" category, the Air Force airlifted more than 400 million ton/miles in '55 and about 600 million ton/miles this year, and re-

# NOW manufacturers large and small can improve operations and save money with new GENERALIFT® Standard Industrial Pallet Boxes!



New illustrated catalog shows applications for reusable and expendable boxes, gives complete specifications, tells how to order. Send for your free copy today.



Catalog No.	Outside Dimensions	Inside Dimensions
IPB-EXP	41 x 35 x 29½	40 x 34 x 24

## New Standard Expendable Generalift Pallet Box

This economical one-trip shipper is sturdily constructed of resawn hardwood to handle loads up to 1500 pounds. Four-way fork entry. Tops, and blocks to permit stacking, are available.

STANDARD INDUSTRIAL RE-USABLE PALLET BOXES			
Catalog No. Regular	Catalog No. Open-Front Bin Type*	Outside Dimensions	Inside Dimensions
IR-L-24	IB-L-24	48 x 40 x 29½	45½ x 37½ x 24
IR-L-30	IB-L-30	48 x 40 x 35½	45½ x 37½ x 30
IR-S-24	IB-S-24	41 x 35 x 29½	38½ x 32½ x 24
IR-S-30	IB-S-30	41 x 35 x 35½	38½ x 32½ x 30

Note: Nesting of stacked boxes reduces listed outside height by ¾".  
\*Gates available on order.

## New Standard Re-usable Generalift Pallet Boxes

These really rugged boxes have outside cleats and four-way entry akids. Stack solidly. Sturdily made of resawn hardwood. Handle loads of 2000 to 3000 pounds. Completely collapsible for KD return. Available regular type or open-front bin type, with or without gate.

Here's a new idea from General Box to help you save money and improve your handling, storing, and shipping operations. Four sizes of the famous Generalift re-usable wirebound pallet box and one new Generalift expendable wirebound pallet box are now available from stock at much less cost than custom-built boxes of the same quality.

### Prompt shipment from stock

The economies of mass production now apply to orders for carloads or lesser quantities, with 20 as a minimum. Minimum orders must be for one kind and size. Boxes are shipped KD, are easily and quickly assembled.

Generalift wirebound pallet boxes have long helped industry to reduce handling, storage and shipping costs. These standard boxes offer the strength, resili-

ency, and light weight of wirebound construction... are made by one of the leaders in the industry... have passed rigorous tests in General Box laboratories and in actual use... utilize maximum space in railroad cars and trucks.

Write today for complete details and prices.

# General Box

1847 Minor Street, Des Plaines, Ill.







Here's a Gaylord "package" of six corrugated boxes — containing sets of controls for home laundry dryers.

## DESIGNED FOR FAST UNPACKING



CORRUGATED AND SOLID FIBRE BOXES  
FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES  
KRAFT BAGS AND SACKS

*Gaylord box designers have both shipper and receiver in mind...and often they can combine cost-savings for the shipper with time-savings for the receiver. For example, component parts can be shipped in exact ratio to their installation requirements, and the boxes placed right on the customer's assembly line.*

*Does this sales advantage suggest interesting possibilities to you? Call your nearby Gaylord office for any type of shipping container.*

GAYLORD CONTAINER CORPORATION • ST. LOUIS

DIVISION OF CROWN ZELLERBACH CORPORATION

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## AIR FREIGHT

*Continued*

quirements are increasing.

The foregoing, should leave little doubt that our present system is obsolete and inconsistent with the stated requirements . . . and yet let me modify this stand slightly merely to keep the record straight and to give due credit that some progress has been made in isolated instances, such as:

1. The electronic data processing machines for requisition, inventory of stock levels and computation of requirements.
2. The new type transport aircraft.
3. The great advances made in the packaging industry in providing light and durable packaging materials.
4. The development of the transport van.
5. The rail piggy-back concept.

But, the fact still remains that few, if any, of these items have been developed and designed with a "SYSTEM in mind"—because we are still moving one pound of packaging for each pound of end-items; and there is still little or no compatibility between the various military and commercial air, rail, truck, water carriers and terminal operations.

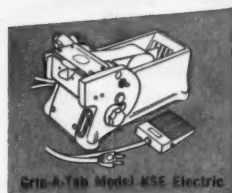
### What Can Be Done?

There is an urgent need, in the Air Force and in industry, for an air freight handling system which takes cognizance of every function from the original supplier to the final consumer. It must be a system instead of our present conglomeration of non-standard equipment, ideas, people, methods, and techniques. We need to standardize our methods, techniques, and equipment used in the documentation, packaging and material handling function in order to provide an integrated system of movement that will permit the millions of pieces of material to be distributed rapidly and with adequate protection.

What are some of the essentials which must be considered and acted upon in order to bring about the desired results?

First, we must recognize that unitization and mechanization are

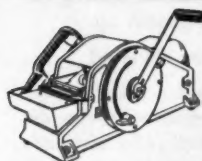
# 2 Great Names...



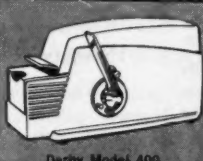
Grip-A-Tab Model MSE Electric



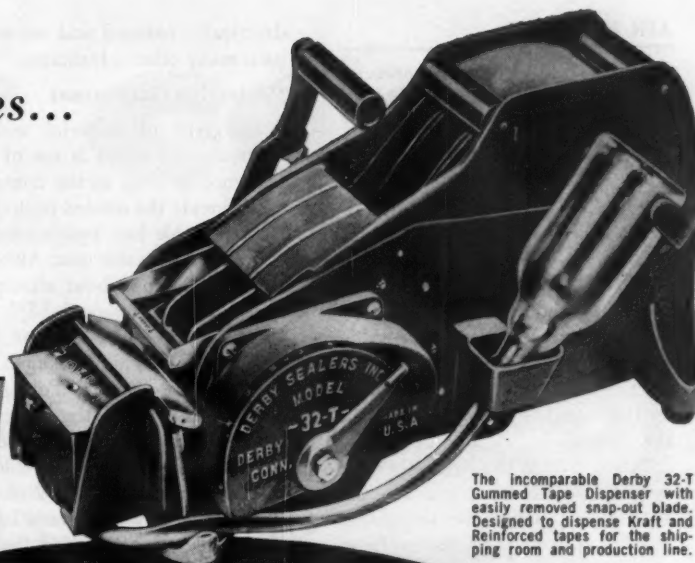
Grip-A-Tab Bag Sealer



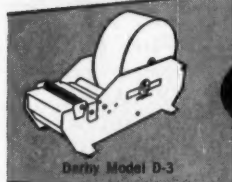
Derby Model 152



Derby Model 400

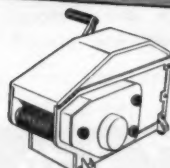


The incomparable Derby 32-T Gummed Tape Dispenser with easily removed snap-out blade. Designed to dispense Kraft and Reinforced tapes for the shipping room and production line.

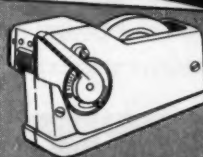


Derby Model D-3

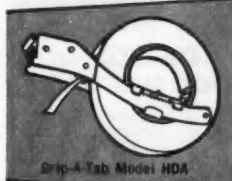
## DERBY and GRIP-A-TAB (GUMMED) (PRESSURE SENSITIVE) TAPE DISPENSERS



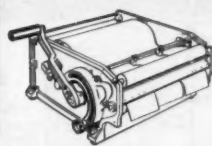
Grip-A-Tab Model 802



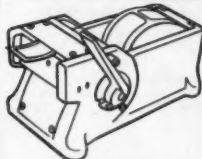
Grip-A-Tab Model 90



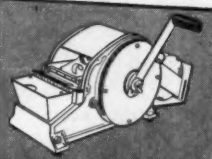
Grip-A-Tab Model HDA



Derby Model BW-12



Grip-A-Tab Model KS-3



Derby Model 15-F

**\* JOB-DESIGNED** ... Every Derby and Grip-A-Tab Tape Dispenser is scientifically designed to perform specific sealing, wrapping, holding, palletizing or pre-packaging operations. There is a Derby or Grip-A-Tab Tape Dispenser to solve your packaging problems.



### Over 60 **JOB DESIGNED**\* Models

Here are just a few of the outstanding models in the famous Derby Sealers and Grip-A-Tab lines of fine tape dispensers and applicators. For office, production line and shipping room ... for every packaging counter ... for any operation where gummed or pressure sensitive tapes or roll labels are used, there's a Derby \*Job-Designed dispenser that will do the job better, quicker and more economically!

Mail Coupon For Further Information and 7-DAY FREE TRIAL OFFER!  
Derby Sealers, Inc. Dept. M Derby, Connecticut

Gentlemen:

I would like a 7-Day Free Trial on Model \_\_\_\_\_ Tape Dispenser.

Please deliver to:

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Zone \_\_\_\_\_

State \_\_\_\_\_

Please send literature on Model (s) \_\_\_\_\_ dispenser (s)

**"IT PAYS TO STICK WITH DERBY"**

**DERBY SEALERS, INC.**

DERBY, CONNECTICUT

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## AIR FREIGHT

*Continued*

so closely related as ham and eggs. The development and operation of an efficient mechanized material handling system is practically impossible without the application of maximum unitization as far up-stream in the system as possible. Therefore, the packaging-man is the hero or villain of this story. The package he builds can be the cross that must be born by the remainder of the people in the system.

If we unitize the items there is no need for added protection for each item, except for sheathing, banding and cover protection from weather in transit, or the like. The individual containers should be of the kinds and sizes that make it feasible to create modular unit loads. Just think of how much more simple it would be to have only 30 or 40 standard size boxes or containers instead of the several hundred that we now have. Procurement costs alone would be

drastically reduced and we would gain many other advantages.

### Protection Important

The type of material used to fabricate containers is not of consequence as long as the container will provide the needed protection, an acceptable low weight, and, of course, a reasonable cost. Although we keep talking about attempting to reach that magical 15% tare weight, surveys reveal that from 35 to 50% of the packaged tonnage is tare weight. You and I know that during test programs for the reduction of tare weight, we ordinarily reach acceptable low tare weights of 15 or 20% but after the test we go back to our "routine" operations and the tare weights go back up. We feel that a well engineered light weight container will provide sufficient and even better protection than the ones in use today.

In the movement of material, there are four major problems confronting us:

1. The lack of a simplified documentation system.

2. The lack of homogeneous loads.
3. The lack of a workable priority system, and
4. Antiquated material handling equipment and procedures throughout the system.

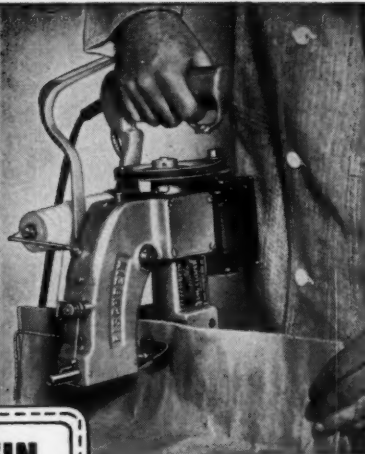
Significant progress is being made in the streamlining of documentation by use of electronic processes. This will help alleviate to a great extent that 80% of the cycle that I mentioned earlier—where the material is waiting for the paperwork to catch up.

### Priority System Needed

We should have a sure-fire simple priority system with the determination that it go by air made by a responsible party who then sees that it does. May I suggest a very simple approach? Just one priority—BY AIR and for especially urgent shipment merely add "BY FIRST AIRPLANE".

The greatest deterrents to the expeditious handling of material for air shipment are obsolete air terminal buildings and material handling equipment and proced-

FOR  
**FAST,  
SECURE,  
LOW COST**  
BAG CLOSING



### FISCHBEIN *Portable* BAG CLOSER

- A truly portable bag closer ... Weighs only 10½ pounds.
- Requires no installation ... plug into any outlet.
- Handles textile and paper bags.
- Simple to operate and maintain.
- Lowest priced bag closer on the market.

FOR DETAILS,  
MAIL THIS COUPON NOW  
**DAVE FISCHBEIN CO.**

Dept. 48  
2720—30th Ave. South,  
Minneapolis 6, Minn.

Name

Firm Name

Address

City

State

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## Tunnels for Safety



**TRUCK MODEL**

**DAZZO DOCK SHELTERS**

Provides a foldable tunnelled passageway between building door and truck or freight car door.

Protects your loading dock loaders and merchandise against rain, sleet, snow or driving winds.

Eliminates accidents and loss of traction, due to wet and slippery conditions.

Protects against changes in temperatures when doors are opened for loading.

**DAZZO PORTABLE FREIGHT CAR DOOR RAIN GUTTERS**

Prevents rain or melting snow from sliding off car roof onto door opening ... thereby avoiding wet and slippery dock boards.

Models for all types of cars

Write for literature... specify your requirements to Dept. F



**Portable Door RAIN GUTTER**  
... additional

**RR SIDING MODEL**

\*Pat. Pend.

**DAZZO PRODUCTS CO.**  
152 Bleecker Street • New York 12, N. Y.

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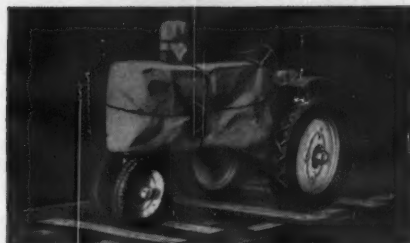


# For LOW COST

## Protection in Transit

### PROTECT MACHINERY FROM DIRT AND WEATHER

FIBREEN wrapped around vital parts of tractors, for example, protects them from weather damage on flat cars. FIBREEN "locks out" moisture and dirt. It is tough and durable yet pliable enough to conform easily to contours.



### GET SAFETY AND ECONOMY IN OPEN CAR SHIPMENTS

Because waterproof FIBREEN keeps shipments safe from the weather, it gives you the economies of low cost open car shipment and handling by crane or other mechanical lift equipment.



### PROTECT TRUCK SHIPMENTS IN TRANSIT AND OUTDOOR STORAGE

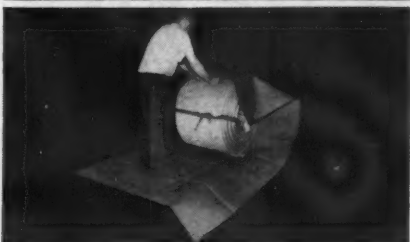
Tough FIBREEN stands up under the punishment of high speed, open trucking, and provides positive protection during outdoor storage.



### FOR BETTER MOISTURE CONTROL

Just as waterproof FIBREEN keeps undesirable moisture out — it keeps necessary moisture in — as when shipping rope, leather, plastic clay, etc.

FIBREEN products are available in a variety of combinations . . . asphalt and non-asphalt laminants, flat and creped krafts and a selection of strengths. Most any widths are made to fit your packaging problem.



# FIBREEN

## INDUSTRIAL PACKAGING PAPER

Waterproof

Airtight

Strong!

AMERICAN SISALKRAFT CORPORATION  
DEPT. FW-12, ATTLEBORO, MASSACHUSETTS

Please send name of nearest Fibreen jobber ☐

Please send samples and booklet on packaging ☐

Name.....

Company.....

Address.....

City.....Zone.....State.....

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## NOLAN ONE-MAN CAR DOOR OPENER



### New Model Adaptable to All Types of Box Cars!

- New Hook Design
- Positive in Any Position
- Long Chain for Long Cars

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OPENER at \$39.50  
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ADDRESS .....

CITY .....ZONE.....STATE.....

## AIR FREIGHT

*Continued*

ures at depots and aerial ports. This matter deserves the most urgent and careful attention. The burden rests with the systems-design engineers and equipment manufacturers to revise their thinking and develop new methods and equipment which will assure a flexible, mobile, high-speed and low-cost air freight handling system. And there is a need for three types of systems:

1. The permanently fixed installation which is geared to a stable capacity and yet can maintain some degree of flexibility.
2. The semi-permanent type for fluctuating workloads.
3. The highly mobile and air transportable for bases without terminals and especially for use in overseas areas. This type is of immeasurable value in wartime conditions.

If we need to have someone show us the way—we can look to

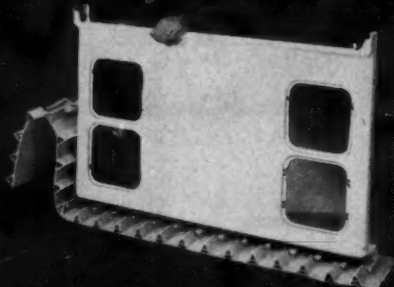
the surface transportation people for guidance. The recently developed concept and interest in the movement of truck-trailers by ship has caused the Maritime Commission to develop new terminal facilities for the roll-on-roll-off technique. And the railroads are making significant headway in developing new type equipment and techniques to expedite loading and unloading at terminals. So, why not the air terminal facilities where time in hours or even minutes is even more critical than surface movement?

Last, but not by any means least, the aircraft designer and manufacturer have the responsibility of providing the system with an airplane capable of rapid turnaround. How much tare can we afford to build into a good handling system as an integral part of an air freight aircraft? Let me answer this with a rather simple example.

### Loading Time

The backbone of the MATS fleet is the C-124 and present loading

## SUS-RAP PROVIDES SAFE TRANSIT and Economical Packaging



Exclusive Vertical-Horizontal suspension safeguards your product both in and out of its shipping carton . . . Fewer packaging components and the elimination of pad folding reduce labor and material costs.

SUS-RAP is engineered to your product and pretested by N.S.T. procedures

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Laboratory Developed and Tested Packaging

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## USING LABELS?

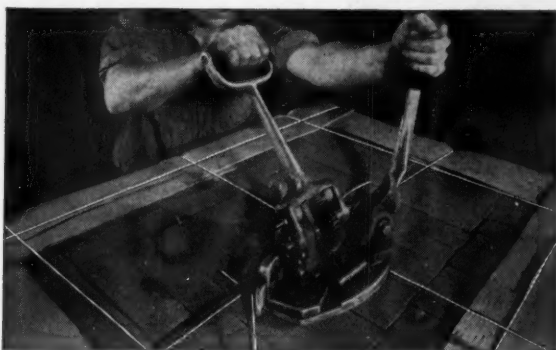
This unique, table-top machine prints shipping and product identification labels and fills in the ship-to address or product information at the same time! Rate: 105 a minute. Cuts the labels to desired size too, faster than hand or machine addressing. Reduces errors. Easy to use. A practical answer to multiple label addressing or marking problems. Write for full details on the Weber Label Machine.

**Weber**

Weber Marking Systems  
Dept. 1-L,  
Div. of Weber  
Addressing Machine Co.  
Mount Prospect, Illinois

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FLOW

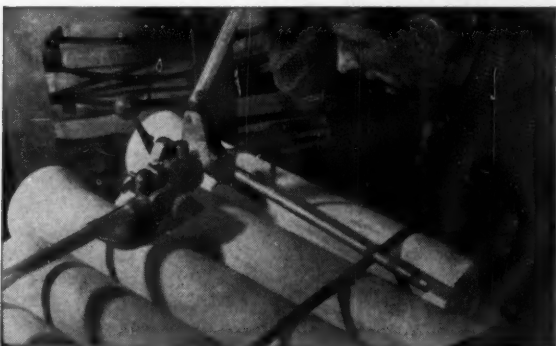
# How USS GERRARD speeds handling—cuts costs



"We have been able to cut handling time, give our customers better service, balance our work load, save storage space, and reduce brick breakage through the use of USS GERRARD Round Steel Strapping," says Glen-Gery Shale Brick Corporation of Reading, Pa., largest building brick manufacturer in the East. Glen-Gery uses 12-gauge USS GERRARD Round Strapping to package bricks in easy-to-handle units of 500.



"We rely on USS GERRARD Strapping to get our houses to the building sites in perfect condition," says West Coast Mills, Chehalis, Washington, manufacturers of prefabricated Far West Homes. These attractive prefabs are shipped all over the United States by rail and truck, bundled securely with USS GERRARD Round Steel Strapping. They arrive consistently at the building sites with every piece intact.



"We reduced handling time by 75%, increased storage space by 33%, and cut shipping damage to less than 1%, by palletizing our tuyeres with USS GERRARD Flat Steel Strapping," says Climax Fire Brick Company of Climax, Pa., producer of 60% of the nation's requirements for these odd-size Bessemer Furnace fire bricks.



Waterproof-wrapped for shipment, this coil of sheet steel is being reinforced with USS GERRARD Flat Steel Strapping. Notice how strip of strapping inside coil exerts outward tension, keeping protective paper in place.

Bring your packaging-tying problems to USS GERRARD. Regardless of what they are, our engineers will help you find the safest, surest, most economical solution to them.

NEW CATALOG—HOT OFF THE PRESS! 36 pages of photographs, descriptions, facts and figures on all USS GERRARD Steel Strapping and associated equipment.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION  
GENERAL OFFICES: CHICAGO, ILLINOIS

**USS GERRARD**  
*Round and Flat* **STEEL STRAPPING**

UNITED STATES STEEL



Gerrard Steel Strapping  
2937 West 47th Street, Chicago 32, Ill.

Please send me, free of charge, the new 36-page GERRARD Blue Book of Packaging.

Name .....

Company .....

Address .....

City ..... State .....

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DECEMBER, 1956

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## AIR FREIGHT

*Continued*

time is four (4) hours or more. To save three (3) hours in loading a C-124 is a gain of three hours in potential flying time. Thus, the 124 at normal of 30,000 pounds at a cruising speed of 200 mph will travel about 600 miles and represent a gain of 9000 ton miles. Assuming a trip of 3600 miles which is the distance between Dover AFB, Delaware and England, this divided into 9000 ton miles—which I called a gain—we have a resultant of 2.5 tons or 5000 pounds which we could afford to sacrifice for a handling system integrated as part of the aircraft.

In summary:

1. Logistic support to our combat forces must be provided through the use of air lift.
2. Our present air freight operation needs modernization.
3. Notwithstanding the great advances in packaging, much re-

mains to be done to drastically cut tare weights of containers—and with emphasis on utilization.

4. Our materials handling equipment and techniques are outmoded—and must be "DESIGNED WITH A SYSTEM IN MIND"; and

5. Both the military and commercial operations must be compatible.

6. TIME IS CRITICAL,—we cannot afford to permit time to pass without developing an air freight handling system to which we can point with pride—and which will do the job when called upon.

For, what good will it do us to have airplanes that will carry tons and tons of freight at hundreds of miles per hour **In The Air** if we spend days and weeks moving that same freight on the ground at a snail's pace?

We Have A Big Job To Do—  
And Time's Awasting—So—Let's  
Get Those Aircraft Off Their  
Asphalt Ramps—And Move That  
Air Freight!

## UNITIZATION . . .

*(Continued from page 114)*

loads and move them rapidly from one section of the plant to another.

These are some of the few things in the way of unitizing loads we have accomplished within our own company. The techniques have been duplicated many times within other companies and industries.

It is becoming evident that, to gain the full potential in handling materials in unit loads, it will be necessary to develop more efficient transportation facilities and methods—so that materials in unit loads may flow freely from the producer to user. We have used shipping containers for many years, but their use has been limited. If standardized shipping containers and an integrated system of handling and transporting those containers could be developed, it would be of vital importance to the whole national economy. However, before such an in-



**FOR SAFER DOCKS...**

**... PROTECT THEM FROM RAIN, SNOW AND ICE with**

**KROMMELT TRUCK OR RAIL CAR-DOX**

RETRACTABLE ALL-WEATHER DOCK PROTECTORS. CONSTRUCTED OF TOUGH, DURABLE FABRIC (HIGHLY RESISTANT TO WEAR, WATER, MILDEW AND FIRE) FITTED OVER HEAVY GAUGE STEEL RETRACTABLE FRAMES—CAN BE POSITIONED (EXTENDED OR RETRACTED) BY ONE MAN IN A MATTER OF MINUTES.

**SPEEDS LOADING and UNLOADING in INCLEMENT WEATHER. REDUCES ACCIDENT FACTORS. PROTECTS MERCHANDISE from LOSS or DAMAGE by WEATHER.**

Meets Requirements of U.S. Dept. of Agr. UL Approved

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FABRICATORS OF APPROVED SAFETY PRODUCTS

CAR-DOX UNITS EXTEND AUTOMATICALLY TO ENCLOSE END OF TRUCK. FRONT CURTAINS (TOP AND SIDE) ADJUST QUICKLY TO PROVIDE FULL PROTECTION.

*Practical Efficient Effective*



UNIT RETRACTS EASILY AND COMPACTLY—AND IS READILY SECURED CLOSE TO FRAME.

For detailed information and prices write:

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**Uniform —  
Strong —  
Smooth Feeding**

**INLAND TYING WIRE**  
(Round Steel Strapping)

Meets all  
U. S. Postal  
Regulations

It's always smooth feeding — no waste — no tangles — no production delays when you tie with Inland wire. Available with galvanized finish, or assorted tough vinyl colors for handy package identification — and in 17, 17½, 18, 18½ and 19 gauge. Packaged in handy 25 lb. self-dispensing cartons, and also furnished in 50, 100 and 150 lb. coils.

**Let us help you solve your tying problems — ask for free information and prices.**



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3940 South Lowe Avenue, Chicago 9, Illinois

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Bostitch D9AD Stapler  
power drives staple into  
carton flaps and  
clinches from the outside



## "Stapling results in a 20% saving"

says PLANT SUPERINTENDENT

Plant superintendents are always looking for ways to cut costs. When a Bostitch Economy Man called at the plant where this photo was taken, a brief demonstration was enough to prove the advantages of a Bostitch air-driven stapler over gummed tape.

In practice, results are:

1. 20% saving in fastening time
2. Neater, cleaner package
3. More space left free for advertising and stenciling on container
4. Improved employee morale and efficiency

Call your nearest Bostitch Economy Man (375 of them in 123 cities) or mail coupon.

Fasten it better and faster with

**BOSTITCH®**  
STAPLERS AND STAPLES

START  
SAVING  
NOW!

BOSTITCH, 712 Mechanic St., Westerly, R. I.

- ☐ Send me a folder about D9AD Air Driven Stapler  
☐ Ask an Economy Man to call on me

We are now using (please check)

- ☐ gummed tape ☐ steel bands ☐ glue ☐ other

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

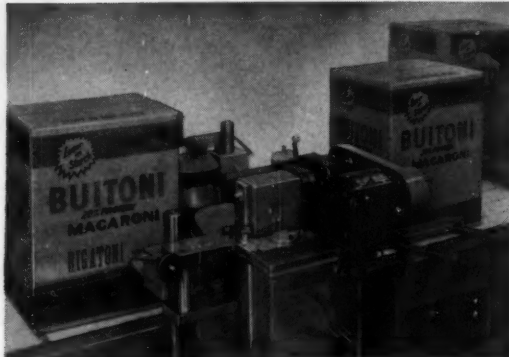
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

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Circle No. 66 on Reader Service Card for more information

## New Package-Imprinting Attachment

*makes accurately-located, high-quality imprints on side of cases, crates, cans, etc.*



Model "750" ROLAPRINTER machine...imprints contents identifications, other legends on side surface of set-up cartons and cases, rectangular metal cans, wood crates, wire or strap-bound bundles, etc. Attaches to conveyor, case-sealer, other production equipment. Not just another "marker" but a precision imprinter that gives "printing-press" results. Also available for imprinting all 4 sides.

This new unit is fully automatic, operates by means of microswitch-activated electro-mechanism that registers imprints accurately; has built-in motor-driven flexographic printing system that synchronizes with surface speed of package. Uses fast-drying liquid ink of any color and rubber type or dies.

Write for descriptive Bulletin RIN-5

*Gottsocho*

**ADOLPH GOTTSCHO, INC.**

**Dept. D, Hillside 5, N. J.**

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

**Automatic  
Production-Line  
CODING, MARKING  
IMPRINTING  
MACHINES**

*For*  
**LOW COST STORAGE**  
shipping and handling

**USE ...  
COLLAPSIBLE  
TIGHT-CORNER  
PALLET BOXES**

**ENGINEERED BY**  
**BG**

- Economical
- Safe and Neat
- More Convenient
- Quickly Assembled
- Handles up to 5000 lbs.
- Collapsible When Not In Use
- Specially Made For Your Needs

**30 Years Material Handling Experience**

**BIGELOW-GARVEY**  
lumber company

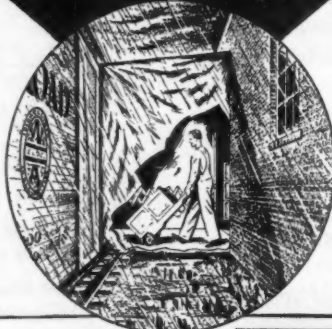
Write for complete details and prices to...

234 W. HURON STREET • CHICAGO 16, ILLINOIS

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## CAPCO DOCK COVERS GIVE YEAR 'ROUND PROTECTION

CAPCO Dock Covers completely enclose the space between car and building doorways protecting loading and unloading during bad weather... preventing accidents... insuring against loss of heat or refrigeration. 51 different models in any size for every loading problem.



Write for literature and name of nearest distributor.

**CAPCO**

622-24 PROSPECT AVENUE • KANSAS CITY 24, MISSOURI

Circle No. 27 on Reader Service Card

## UNITIZATION

*Continued*

egrated system of standardized shipping containers can be developed, it will be necessary that the public carriers, particularly the railroads, take a more conciliatory and realistic attitude toward each other, recognizing certain inherent costs and advantages that each type of carrier has over the others.

The use of shipping containers for handling a wide variety of materials has been increasing. Shipping containers offer the advantages of shipping packaged goods and bulk materials to minimize damage, contamination and pilferage in transit, and also to avoid individual rehandling and checking of a number of small articles when transported in one large container. Containers may vary in size from units of a few cubic feet to large demountable van bodies with over a thousand or more cubic feet of capacity.

### Classification

Shipping containers can be classified into four categories which designate size and use:

1. Pallet containers
2. Cargo containers
3. Bulk shipping containers
4. Van containers

There are a great many types of pallet containers now in use—including pallet boxes, baskets, racks, bins, crates, carton containers—and of such dimensions that multiple numbers will fit within a boxcar or highway truck.

The term "Cargo container" is descriptive of a type of shipping container usually larger than a pallet container but of weather-proof construction for outdoor storage and transportation on open cars, trucks, barges, and ships. Such containers are used for both bulk and merchandise materials and are of very rugged construction for crane handling. They may also be arranged for transporting many kinds of special freight with a variety of inside fixtures, or they may be insulated and refrigerated. Cargo containers are used primarily by water transportation companies, with some limited use by rail shippers,

FLOW



but essentially these containers remain captive from origin to destination.

### Freezer Container

One of the most interesting recent developments in cargo containers is the liquefreeze container made by Aluminum Company of America. It consists of an aluminum liner, six inches of insulation, and an aluminum outer jacket. It is used for shipping frozen foods long distances. In use, the container is loaded with foods, and the contents are chilled with liquid nitrogen to 150°F. or lower, depending on the time en route. The container is then closed, sealed and shipped. It will hold sub-zero temperatures for weeks without refrigeration. It has been used successfully to transport frozen foods from the United States to tropical countries.

Bulk shipping containers are used for handling crushed, powdered or fluid materials. Many are designed as a hopper type to be handled by fork truck or crane equipment. One very interesting development in recent years has been the "seald bin" container made by the United States Rubber Company. These rubber containers come in 70, 300 and 370 cubic foot sizes. They are handled either by crane or fork lift truck, equipped with a lifting eye. These containers are collapsible and are particularly suited for handling bulk material under certain circumstances.

Bulk containers have the special advantage of keeping the material free from contamination. Also, the elimination of bags when handling bulk materials minimizes the liability of loss or damage and saves the cost of the bags.

In many respects the van-type container is equivalent to a truck or trailer body but built so they can be mounted on a flat frame highway truck or trailer, or on a railroad flat car.

*Editor's Note: Here Mr. Schirmer considered the modular container, or Mobilvan, for unitized shipments, which were included in the extensive report on Piggybacking in the October and November issues of FLOW.)*

Another new development, which has great possibilities of encouraging more utilization in industry, is a unit load box car which is divided into five compartments, each with rolling side doors and area enough for receiving four standard unit pallet loads. The unit load box car would permit five shippers to use the same car, or would permit one shipper to ship five different products. Actual tests have shown that this unit load car can be unloaded by two men with fork lift

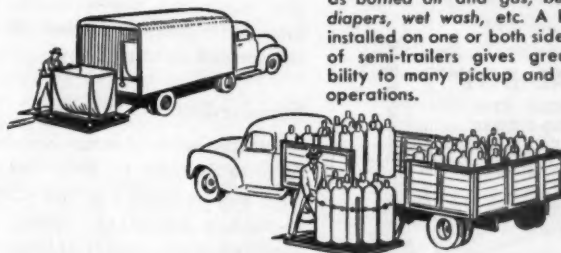
trucks in less than fifteen minutes.

Turning now to air transportation, which, in future years, will have quite an influence on the unitization of materials, we find that today it remains pretty much a manual handling operation.

There is one system where materials are unitized and handled as a unit into the cargo compartment of aircraft. This system is known as "Cargon". Basically, it comprises wheeled pallets which are pre-loaded and then slid lengthwise into the aircraft. So far, in its

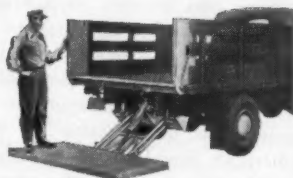
## Here's trucking **AUTOMATION** that lets you combat High Cost Hauling

Cost saving way to handle such items as bottled air and gas, beverages, diapers, wet wash, etc. A lift gate installed on one or both sides or end of semi-trailers gives great flexibility to many pickup and delivery operations.

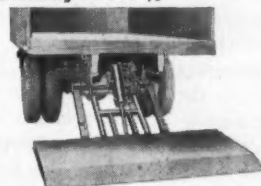


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### FOR ¾ TON and Larger Trucks and Semi-Trailers



Model No. 144 handles loads up to 1000 lbs. Cuts loading and unloading time 50%.



Model No. 145 handles up to 2000 lbs. on 1 ½-Ton and larger trucks and semi-trailers.

Model No. 146 handles up to 4000 lbs. on heavy trucks and semi-trailers.

If high freight rates and costly delivery services are cutting a swath out of your profit picture, here are five ways you can offset them.

1. Speed up deliveries.
2. Develop faster, easier ways of loading and unloading trucks.
3. Systematize handling of bulky, awkward, heavy shipments.
4. Prevent damage to goods, yet make it easier and safer for drivers to handle most shipments alone.
5. Help drivers contribute to the satisfaction of the receiver.

All of these advantages are yours when you install Lift Gates on your trucks. We will be glad to recommend the systems, the size and type of Gate best suited for your work.

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**ANTHONY COMPANY**  
Streator, Illinois

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Telescopic or Hinged,  
capacities  
up to 4,000 lbs.



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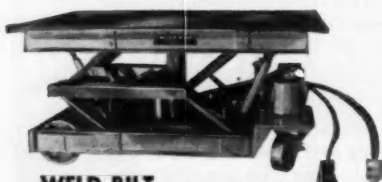
## "PAL-BOY"

PALLET TYPE  
ONE-STROKE  
MECHANICAL LIFT TRUCKS  
For loads up to 2000 lbs.



## WELD-BILT HYDRAULIC PALLET-TYPE TRUCKS

2000 to 6000 lbs. cap.



## WELD-BILT HYDRAULIC LIFT TABLES

Heavy-duty type, lifts from 2 to 10 tons,

## WELD- BILT AUTOMATIC CONVEYOR- LIFT ELEVATORS



**WEST BEND EQUIPMENT CORP.**  
MATERIALS HANDLING ENGINEERS

335 WEST WATER STREET • WEST BEND, WIS

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138

## UNITIZATION

*Continued*

operating tests, it has been found easy to unload 12,000 pounds of Cargo and load the same quantity all in the turn-around time of 20 minutes.

Such a unit load system as exemplified by Cargon is definitely needed if only for speeding up turn-around time of cargo aircraft. The capital investment in aircraft continues to become larger for each unit and it will become increasingly more so as they become jet engine-powered.

The development of an integrated system of pallet containers for air shipment also has great possibilities. It is quite possible that when this comes about, all mail and express shipments will be transported by air.

## Standardization Needed

Unitization in industry will continue to increase in scope but its pace will be slow. The full effects of such a universal system of handling and transporting of products and materials will not grow to full stature until containers are standardized and a system of interchangeability is worked out between the various public carriers, both within their own systems and between each other. The problem of standardization is of such wide national scope that a satisfactory solution is possible only with the encouragement of some such organization as the American Standards Association, and the use of a committee system to study the problem and to reach general agreement among the various interested parties regarding a practical system.

Considerable progress has been made in the last few years in certain aspects of this problem as a result of a more conciliatory attitude on the part of the public carriers toward each other. This demonstrated cooperation is encouraging but complete cooperation and respect for each carrier's position must come about before our national economy can benefit fully from the potential offered by the unitized handling and shipping of products of our industry.

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Circle 38 on Reader Service Card  
FLOW



## in useful literature

A bibliography of New and Current Manufacturers' Publications available upon request. Indicate choice (s) on self-mailing Reader Service Card on pages 37 and 38.

### **Describes Two Electric Truck Models:**

A new 4-page folder, illustrating and describing its new "Air Rights" 6000 pound capacity electric-powered fork truck, has just been published by the Elwell-Parker Electric Company. Two standard models are available: a 68 inch model which is designed for freight car and truck loading; and an 83 inch model designed for tiering where headroom is unrestricted. The free literature contains more than a dozen illustrations. Detailed specifications are likewise included.

Circle 245 on Reader Service Card

### **Adds Tray Model to Expendable Pallet Line:**

Titan Pallet Company has recently made available a 4-page folder announcing the development of a tray-type model to supplement the firm's line of expendable pallets. The new unit is claimed to have capacities up to 1 ton, and can stack loaded up to four high. Constructed of paperboard, the pallet is handled the same as conventional wooden pallets, and lends itself to bag, carton and bulk material handling. The tray lip serves to hold loads securely, to help cushion products, and to prevent possible shifting during transit.

Circle 246 on Reader Service Card

### **35-Ton Crane Catalog Available:**

The Thew Shovel Company has just published a 16-page catalog describing its new 35-ton Lorain Moto-Crane, recently added to the Lorain line of power shovels and cranes. The illustrated publication describes fully the major features of the entirely new design of the high capacity, heavy-duty lifting crane that can be transported over the highways.

Circle 247 on Reader Service Card

### **Automatic Overhead Controls:**

A 24-page catalog issued by The Loudon Machinery Company describes the Selectomatic control dispatch system, which provides automatic and un-

attended overhead handling. The control system employs no limit switches, mechanical trips or multiple conductors. Described in the catalog are systems for cupola charging, dipping and drying operations, packing plant applications, icing refrigerator cars, and general merchandise handling.

Circle 248 on Reader Service Card

### **Heat Sealable Polyester:**

A 6-page brochure describing the new Scotchpak brand heat sealable polyester film is now available from Minnesota Mining and Manufacturing Co. The new brochure, printed in color, emphasizes the heavy duty packaging and protective wrapping abilities of the heat-sealable film, which can be used with regular sealing equipment, to give a seal as strong as the film itself. Scotchpak is available in two forms—type A, sealable on one side, and type B, sealable on both sides.

Circle 249 on Reader Service Card

### **Covers New SAE Boss Fittings:**

A new catalog has just been published by Anchor Coupling Company, Inc., illustrating and describing the company's complete new line of SAE boss fittings and ring adapters to satisfy the new SAE Straight Thread Boss Standards, as specified in the 1956 SAE Handbook. A complete line of these new adapters is now offered by the company, in a wide range of sizes and styles. Also shown are the new Anchor tube nuts, available in short nut, SAE long nut and 3-piece assembly styles.

Circle 250 on Reader Service Card

### **Slide Films Available:**

Slide films of over 400 photographs of material handling equipment in operation are available from the Material Handling Institute, Inc. Prepared by the Institute's College-Industry Committee on Material Handling Education, the slide films are available to industry at a cost of \$15.00 per set, and to colleges for \$10.00 per set. To enable users to either make individual slides or select a desired series for strip presentation, the slide film is in strip form. Included in

the 400 action shots are lift trucks, hand trucks, attachments, conveyors, unit loads, pallets, containers, hoists, monorails and all other current types of equipment shown in a wide variety of handling operations. Orders for the slide films should be sent to: Irving M. Footlik, Secretary; College-Industry Committee on Material Handling; 8444 S. Yates Avenue; Chicago 17, Illinois.

### **Handling Hardware with Conveyor:**

A detailed field report, No. 99, has been released by The Rapids-Standard Company, Inc., telling how a Philadelphia hardware store has speeded up its customer service 30% by installing an inter-floor conveyor system. The report outlines the hardware store's problem of making faster order selection and delivery from the four floors and basement of its warehouse.

Circle 251 on Reader Service Card

### **Wire Rope Manufacture Filmed:**

The manufacture of wire rope is shown in a sound-color movie made available by the Wickwire Spencer Steel Division of Colorado Fuel and Iron Corporation. The film shows production in operations from the basic steel making to the testing of the finished rope. Special emphasis is given to the chemical and physical tests that insure quality control through every step in the manufacturing process.

Circle 252 on Reader Service Card

### **Strapping Applications Shown:**

The Gerrard Steel Strapping Division of United States Steel Corporation has just released a new 36-page "Blue Book of Packaging", containing 130 photographs of different strapping operations, as well as a complete review of U.S.S. Gerrard products. This booklet includes items ranging from semi-automatic machines for reinforcement and unitizing of corrugated containers, to the strapping used for flat carloads of lumber and packaging of sheet steel.

Circle 253 on Reader Service Card



### Announces New Product Bulletin:

A new 4-page bulletin, describing the crawler-mounted Model C-35 Bantam, has been introduced by the Schield Bantam Company. The new bulletin, No. C-101, contains complete information concerning the latest specifications, features, capacities and application data for the company's crawler-mounted  $\frac{3}{4}$  cubic yard, 5-ton crane-excavator model. Complete machine specifications are listed, and operating ratings and capacity ratings are shown in conjunction with large, easy to read charts covering the crane, shovel and back hoe attachments.

Circle 254 on Reader Service Card

### Conveyor Chain for Cases, Cartons:

Chain Belt Company has recently published a 4-page bulletin describing its new 9250 case conveyor chain. Designed specifically for handling cases, cartons, crates and cans, Rex 9250 chain will flex in two directions—laterally to a radius as little as 12 inches. The chain has a broad, flat carrying surface with bridged top link construction. It is furnished in corrosion and abrasion-resistant metal and will fit standard 2-inch cracks.

Circle 255 on Reader Service Card

### Portable and Industrial Elevators:

Bulletin 5211 recently published by Barrett-Cravens Co. covers, in 65 pages, the Barrett line of portable elevators, other industrial elevators, and portable cranes. Many applications of the equipment are pictured, and specifications as well as descriptive data are included.

Circle 256 on Reader Service Card

### Tips on Caster Selection:

Bond Foundry and Machine Company has just released its new 68-page Catalog No. K-40, offering complete specifications, illustrations and descriptive data on all types of Bond casters. An introductory section gives tips on simplified selection of the right casters for the job. In addition, the catalog offers a section describing other Bond material handling products such as hand trucks, drain racks, lift jacks, platforms and dollies.

(Also reviewed in November)

Circle 257 on Reader Service Card

### Gives Battery Charger Data:

Bulletin GEA 6525, a 4-page folder offered by General Electric Company, gives descriptive information, features and models of metallic rectifier battery

chargers for motorized hand trucks. Seven models of combination chargers are described, and all can be easily switched from two-rate charging for lead-acid batteries to constant-current charging for nickel-alkaline batteries. Specifications are presented in handy tabular form.

Circle 258 on Reader Service Card



### For Hardware Packaging:

A new 6-page folder issued by Brown Bag Filling Machine Co., Inc., describes the company's Vibracount, Formpak and Envelope Packer, designed for fast, low cost hardware packaging. Descriptions, illustrations and specifications of the three units are provided, and methods in which they may be used together are explained.

Circle 259 on Reader Service Card

### Describes Gear Motors:

Bulletin GEA-6133A, offered by General Electric Company, illustrates product features and includes selection data, dimensions, ratings and specifications of General Electric fractional horsepower gear motors.

Circle 260 on Reader Service Card

### For Tank and Bin Weighing:

Emery tank and bin weighing systems are the subject of a new 12-page booklet recently published by The H. A. Emery Company. The literature contains cross-sections, schematic diagrams, and illustrations of various weighing systems manufactured by the company.

Circle 261 on Reader Service Card

### Features Crawler-Mounted Shovel Cranes:

A new condensed catalog of the complete line of Link-Belt Speeder shovel cranes has just been released by the Link-Belt Speeder Corporation. The 8-page Book 2577 features a 4-page center display with descriptions of 18 crawler-mounted models ranging from  $\frac{1}{2}$  to 3

yards, 8 to 75 ton capacities; five truck cranes with capacities from 12 $\frac{1}{2}$  to 35 tons; and four self-propelled, rubber-tired models with capacities from 15 to 35 tons. The catalog also includes a section on Speed-O-Matic, an exclusive feature which provides full hydraulic power control, said to allow output increases up to 25 percent.

Circle 262 on Reader Service Card

### New Booklet for Sweeping Congested Areas:

As a result of recent technical developments, many congested areas formerly swept by hand can now use power sweeping, according to a new booklet available from the G. H. Tennant Co. This 8-page booklet—entitled "Can We Use Mechanized Sweeping Profitably?"—discusses aisle widths, dust control, possible savings and other pertinent points. It also includes a check list, to determine a sweeper's usefulness, and its values for sanitation, safety, etc.

Circle 263 on Reader Service Card

### Live Storage Racks:

A 6-page illustrated brochure offered by The Alvey-Ferguson Company fully describes the A-F line of Live Storage Racks. The literature tells how custom and pre-engineered racks can store, for short periods, such items as short-lived inventory, parts in process, palletized loads, different sized packages, component parts, etc. The literature contains a complete discussion of the live storage principle, engineering details, components available, and illustrations of typical installations.

(Also reviewed in November)

Circle 264 on Reader Service Card

### Reinforced Tapes Discussed:

Bulletin No. 17 offered by Better Packages, Inc. discusses advantages that are obtainable through the use of reinforced tapes for sealing cartons. Labor and material costs are compared with those for ordinary tapes, and the literature points to savings possible to conversion to a method of sealing cartons with only two center strips of reinforced tape, instead of six strips of ordinary tape required to accomplish the same degree of sealing protection.

Circle 265 on Reader Service Card

### Industry Scales Described:

A variety of scales for industrial uses are described in Catalog No. 556 offered by Detecto Scales Inc. This 24-page booklet contains full descriptions, specifications and photographs of scales designed for all types of industrial weighing applications.

Circle 266 on Reader Service Card

### **Closes Re-Usable Containers:**

An entirely new type of metal closure device for plywood re-usable containers is described in a new brochure just issued by Metalstamp, Inc. The new closure employs a short stretch of metal strapping, to make possible a new type of knock-down, re-usable shipping container that is pilfer proof, dust and vermin proof, and adaptable to unit loads. Containers are made in any size, and consist of six plywood panels which, when knocked down, occupy only 1/6 the space of assembled containers. The closure device allows the container to be assembled in 22 man-minutes, and the only tools required are standard strapping tools.

Circle 267 on Reader Service Card

### **Condensed Data on Electric Hoists:**

A new 4-page illustrated bulletin, No. H-44, describes the complete line of P&H electric hoists. Issued by the Harnischfeger Corporation, the bulletin includes condensed specifications and specially prepared cutaway photographs of the complete Hevi-Lift and Zip-Lift hoist line. Especially featured is the new P&H control cabinet, newly designed as a result of extensive surveys among hoist users.

Circle 268 on Reader Service Card

### **Synthetic Rubber Bulk Container:**

Two new brochures offered by United States Rubber Company describe the new Sealdbin container system, for flowable dry bulk like a tire, with two or more piles of cord fabric and synthetic rubber molded into one piece. It is collapsible, non-corrosive and verminproof, and reinforced internally by strong, flexible cables which converge from the bottom and are attached to a lifting eye at the top. Internal fittings are non-corrosive or rubber coated as required. The Sealdbin container is available in capacities from 50 to 370 cubic feet.

(Also reviewed in October)

Circle 269 on Reader Service Card

### **Describes Complete Strapping Line:**

A 36-page catalog recently published by Gerrard Steel Strapping Division, United States Steel Corporation, describes the full line of USS Gerrard steel strapping and strapping equipment. The booklet covers the history of strapping, and describes applications used in a variety of industries. It then goes on to describe and illustrate various types of round and flat strapping, seals, dispensers, tensioners, pliers, containers, cutters and other strapping accessories.

Circle 270 on Reader Service Card

### **Provides Instantaneous Visual Communication:**

A new 4-page bulletin issued by General Precision Laboratory Inc., describes the use of GPL closed circuit television equipment in the industrial, banking, educational and medical fields. The parabolically shaped camera may be used with monitors or conventional TV receivers, and a remote control device makes it possible to pan, tilt, focus and adjust settings from a remote location.

Circle 271 on Reader Service Card

### **Releases New Research Bulletin:**

Facilities of the Allis-Chalmers Central Research Laboratories are described and portrayed in digest form in a new 24-page bulletin released by Allis-Chalmers Manufacturing Company. Bulletin 48B8448 covers facilities involving electrical, mechanical, physics, nuclear, chemical, metallurgical and processing research projects, initiated to bring the company's product and design engineers new methods and processes for the development of new and better products.

Circle 272 on Reader Service Card

### **Film Shows In-the-Floor Conveying System:**

Truckveyors, in-the-floor type conveying systems for moving 4-wheel platform trucks, are the subject of a new 16 mm sound and color film now released by Link-Belt Company. Entitled "Pathways to Profit", the film illustrates how Trukveyor installations solve problems in railroad terminals, motor freight docks, air and water terminals, distribution centers, parts depots, warehouses and assembly plants. Engagement and disengagement of 4-wheel trucks with the conveyor chain below the floor is clearly shown, as are operations of other components comprising the system.

Circle 273 on Reader Service Card

### **Photoelectric Controls Applications Covered:**

A new 16-page catalog offered by Autotron, Inc. illustrates widely varied types of photoelectric control equipment, and illustrates their application to industrial uses. Equipment described includes photoelectric controls ranging from moderate to ultra-sensitivity, high speed and impulse-actuated units, photoelectric and electronic timing controls, and a variety of light sources affording many special features such as beam intensity adjustment, extra low voltage connections, dual filament lamp and safety relays.

Circle 274 on Reader Service Card

### **Releases Bulletin on Magnet Line:**

A new bulletin on the company's line of rectangular and rail handling magnets has been released by the Ohio Electric Mfg. Co. Bulletin 150-A describes the complete line of magnets ranging in size from 19 x 32 inches to 28 x 74 inches. Data is contained in the literature giving details on materials, construction, required headroom, dimensions and other important specifications.

Circle 275 on Reader Service Card

### **Storage Unlimited:**

A new adjustable storage rack that has no clips, no bolts, and is assembled with only one hammer, is the subject of a 4-page bulletin available from Rack Engineering Company. The standard unit has a capacity of ten tons, and consists of uprights, "Z" bracing and shelf arms. The racks will accommodate pallets, skids, dies and bulk items, and are available in capacities of 15, 20 or 25 tons when required.

(Also reviewed in November)

Circle 276 on Reader Service Card

### **Automatic Bag Filling, Closing and Sealing:**

The model A Bagpacker, an automatic bag filling, closing and sealing machine, is the subject of a 4-page bulletin offered by the Bagpak Division of International Paper Company. The literature provides such pertinent data as recommended use, bag size range, operating speed, sewing unit, construction, motors, scales, method of operation and shipping weight of the unit. A blueprint-type dimensional sketch is also included.

Circle 277 on Reader Service Card

### **Crane Catalog Available:**

A 24-page catalog recently published by American Hoist & Derrick Company fully describes the company's truck cranes and cruiser cranes, in 30 ton capacities. The literature points out the various components of the cranes, explaining the operation of the units and describing them in full detail.

Circle 278 on Reader Service Card



### **Discusses LPG Operational Costs:**

"Fork Lift Operational Costs with LP-Gas" is the subject of a 4-page report just published by Century Gas Equipment Company. According to the report, industrial truck users can affect savings in reduced fuel bills, oil consumption and maintenance costs, through the use of LP-Gas. In addition, the literature illustrates LPG carburetion equipment, typical installations and applications.

Circle 279 on Reader Service Card

### **Thermal Impulse Heat Sealing:**

An 8-page catalog offered by Vertrod Corp. offers illustrations, descriptive data and illustrations on the firm's line of thermal impulse heat sealing machinery. Hand, foot pedal and power-operated models are included in the literature, and models are included which are designed specially for drum liners.

Circle 280 on Reader Service Card

### **Describes Synchronous Induction Motor:**

The Synduction motor, a synchronous induction motor which provides dependable constant speed, simplicity of operation and low first cost in a number of industrial applications requiring 40 hp or less, is described in a new bulletin by Allis-Chalmers Manufacturing Company. Supplying high efficiency and relatively high power factor, the Synduction motor is capable of giving variable speed operation by variable frequencies up to and above 300 cycles, and speeds above 10,000 rpm.

Circle 281 on Reader Service Card

### **Catalog on Flexible Chain Couplings:**

Morse Chain Company has announced that its 16-page flexible chain coupling catalog has been completely revised. Specifications, dimensions, ratings and applications are given on series DSC, series SA silent chain couplings and series DRC roller chain couplings. Pertinent information is also tabulated on stamped steel covers, plastic covers and split aluminum covers. Included in the catalog is general information explaining the purpose and function of flexible chain couplings.

Circle 282 on Reader Service Card

### **Caster Application and Selection:**

A new catalog on casters, listing over 40 new models and containing practical application suggestions and caster selection data, has been made available by

Gleason Corporation. The company manufactures a complete line of medium and light duty casters, as well as solid rubber, semi-pneumatic and full pneumatic wheels. Specific uses are listed for casters in 30 different industries, and suggestions are offered for operational variables such as load requirements and floor conditions.

Circle 283 on Reader Service Card

### **Conveyor Stars in Public:**

The Mighty-Midget counter-top conveyor is the subject of a 4-page folder issued by Metzger Conveyor Co. Designed for public appearances on top of or directly behind display cases, the Mighty-Midget is zinc or cadmium plated, and is of open construction for ease in cleaning. Nickel plated nipple caps cover all shaft ends for safety and sanitation. The units are available in straight five foot sections, with matching curves of 45° or 90°. Widths available are 10-3/4, 14-1/4 and 17-1/4 inches.

(Also reviewed in November)

Circle 284 on Reader Service Card

### **Lists V-Belt Features:**

Construction features of the Texrope grommet V-belt, said to provide 20 to 50 percent longer life than ordinary belts, are described in a new bulletin released by Allis-Chalmers Manufacturing Company. According to the bulletin, No. 20B6497C, the Texrope grommet V-belt has one-tenth the shrinkage, one-third the stretch, runs cooler and grips better than ordinary belts.

Circle 285 on Reader Service Card

### **Wirebound Catalog:**

A new 8-page catalog on Generalift standard industrial wirebound pallet boxes has been announced by General Box Company. The catalog describes the many ways that pallet box bulk handling can be applied, and provides complete specifications.

Circle 286 on Reader Service Card

### **Pulpwood Logging Film Available:**

"Pulpwood Logging" is the title of a new 16 mm sound and color film available for showing from Hyster Company. The motion picture describes hardwood logging methods in rugged territory near Bridgton, Maine. Complete operations—bunching, roading, cutting bolts and hauling—are described. The film shows how an operation involving 14 men produces two cords per day per man, from standing tree to mill. Production increase was said to be achieved through the use of Hyster-built and Caterpillar-built logging equipment.

Circle 287 on Reader Service Card

### **Describes Trucks, Storage Racks:**

A new catalog describing its full line of Floormaster trucks and Loadmaster storage racks is now available from Lewis-Shepard Products, Inc. Designated catalog No. 29-1, it contains complete specifications on both the trucks and the storage racks, and is illustrated throughout with drawings and photos. In addition, the catalog points out many specific commercial and industrial applications for this material handling equipment.

Circle 288 on Reader Service Card

### **Describes New Electric Power Sweeper:**

A new electric power sweeper which can work a full 8-hour shift without recharging is described in a 2-page bulletin recently made available by Wayne Manufacturing Company. The model 605-E sweeper is said to be especially effective where quiet and fume-free operation is needed. The literature describes such features as the new sweeper's built-in battery charger, three speed forward and one speed reverse transmission, and large effective hopper capacity.

Circle 289 on Reader Service Card

### **Holds 50 Wire Coils:**

A combined skid and storage rack capable of accommodating as many as 50 heavy gauge wire coils at one time is the subject of literature available from Republic Steel Corporation, Pressed Steel Division. Intended to reduce the amount of individual coil handling by boom and fork lift truck, the one-piece unit consists of a corrugated steel skid welded to a U-shaped, open-sided superstructure. Both skid and superstructure can be made to any specified dimensions. The unit can be equipped with knee braces or channel runners as required.

Circle 290 on Reader Service Card

### **Shows Latest Truck Design Trends:**

Latest trends in lift truck designs are shown in a 12-page booklet offered by Hyster Company. Included are 25 different Hyster trucks and cranes ranging in capacity from 1000 to 30,000 pounds, as well as several popular lift truck attachments.

(Also reviewed in November)

Circle 291 on Reader Service Card

### **Lightweight Motor Truck:**

A new tricycle motor truck, powered by a 2 1/2 hp gasoline engine, is the subject of a 2-page folder by Stokvis-Edera & Co., Inc. The Multiton "Excelsior" has a low deadweight of 366 pounds, yet



## ... CURRENT LITERATURE ... CURRENT LITERATURE ... CURRENT LITERATURE

is capable of hauling a 1500 pound payload. Body length is 69 inches, and the truck's unique steering apparatus allows it to turn its own length. Two models are available, having maximum speeds of 8 and 12 mph.

**Circle 292 on Reader Service Card**

### New Tractor-Compressor Literature:

Four new case histories have been published by the Le Roi Division, Westinghouse Air Brake Co., on the Tractair, a combination tractor and air compressor. These case histories, as well as the four which were previously offered by the firm, describe the all-purpose Tractair as used on air application jobs, with or without any of more than a dozen attachments.

**Circle 293 on Reader Service Card**

### Describes LPG Cylinders:

Catalog 1502-A issued by The Weatherhead Company describes LP-Gas cylinders, designed in accordance with ICC Specifications 4BA 240 in models of 100, 60 or 20 pounds. Also described are industrial truck cylinders, in capacities of 43½, 33½ and 20 pounds. These propane containers are fitted with relief valve, liquid withdrawal valve and float gauge, as specified by the customer. Additional fittings such as fast fill valve and fixed liquid level gauge can also be supplied.

**Circle 294 on Reader Service Card**

### Packaging Machinery:

Automatic packaging equipment is described in a 4-page bulletin recently published by Pak-Rapid Inc. In addition to the basic Pak-Rapid, the literature contains information on the semi-automatic magazine feed for identical circular shapes, the semi-automatic conveyor feed for handling irregular long items, the automatic hopper feed for screws and metal parts, semi-automatic turret feed for irregular shapes, semi-automatic tray conveyor feed for assortments of small parts, and the automatic hopper feed for all types of tablets and capsules.

**Circle 295 on Reader Service Card**

### Self Sufficient Mixer:

Driv-A-Mix, a new and completely self-sufficient traveling cement mixer, is the subject of a 4-page brochure published by Wright Engineering and Supply Co. The unit moves under its own power at road speeds up to 18 mph, and eliminates wheel barrows, cement bugies and stationary mixers. It is capable of handling 20 cubic feet every four minutes; small batches even faster. The tricycle steering arrangement allows a

full turn within a 15 foot circle. The unit is 60 inches high, 57 inches wide and 10½ feet long, and has a gross weight of 3300 pounds. Retractable wheels make the whole unit portable. A portable batcher, designed as an accessory trailer to the unit, is also available, so that batches may be loaded while the mixer is pouring.

**Circle 296 on Reader Service Card**



### New Low-Lift Platform Truck:

A 4-page bulletin giving drawings and specifications of the new Model LO-2 low-lift platform electric-driven industrial truck, has recently been released by Automatic Transportation Company. Among the features of this 4000 pound capacity truck are balanced and shockless steering, automatically controlled and timed sequence of movement through all four horizontal speeds, fully equalized trail axle compensating for uneven floor conditions, and silicone treated motors capable of withstanding severe overloads, even after exposure to temperatures of 300° to 400°F.

**Circle 297 on Reader Service Card**

### Complete Data on Overhead Conveyor Line:

A new catalog is offered by Mechanical Handling Systems Inc., designed to present a complete and easy-to-use reference on the firm's overhead conveyor, the Monoveyor. According to the manufacturer, the catalog offers a "working tool" for material handling and production engineers. For a copy, write on your letterhead directly to Mechanical Handling Systems Inc., 4600 Nancy Ave., Detroit 12, Mich.

### Offers Fertilizer Scale Data:

A new high speed automatic fertilizer bagging scale, capable of bagging up to 24 sacks per minute, is described and illustrated in a new 2-page data sheet issued by Richardson Scale Co. Sheet No. 5601 discusses the HA-39 fertilizer

scale, containing key specifications, operating features and illustrations of the unit.

**Circle 299 on Reader Service Card**

### Releases Power Lubrication Data:

Up-to-the-minute details on the most recent developments in power lubrication systems are featured in a new catalog published by Lincoln Engineering Company. Complete information is given on new power-operated, centralized lubrication systems, including descriptions and functions of manual as well as mechanical and electric automatic controls. Photographs of various installations are included, as well as diagrams and information on ordering.

**Circle 300 on Reader Service Card**

### Hydro-Pneumatic Accumulator:

A 4-page bulletin published by Greer Hydraulics Inc. explains the operations of a hydraulic component which is said to cushion shock in the hydraulic system or fork trucks, when the trucks are subjected to abusive operation conditions. The accumulator consists of a flexible rubber bag charged with an inert gas, surrounded by hydraulic fluid and encased in a steel shell. When mounted to the hydraulic system of the truck, the unit absorbs severe shocks which might otherwise be transmitted through the system.

**Circle 301 on Reader Service Card**

### Describes Three New Models:

"New Traxcavators for New Profits" is the title of a booklet recently published by Caterpillar Tractor Co. The 8-page booklet explains how the firm's three new Traxcavators—Nos. 933, 955 and 977—are designed to offer improved features to users. Pictures illustrate the three models at work on various applications, and are accompanied by production figures on specific contractor's jobs. Numerous attachments are also described.

**Circle 302 on Reader Service Card**

### For Handling Metal Coils:

Mansaver grabs, engineered especially for handling metal coils, are the subject of a 4-page bulletin issued by Mansaver Industries, Inc. A variety of grabs are illustrated and described in the literature, including models for single and double rim gripping, triple coil handling, core entry, diametral gripping, coil turnover, and several other specialized applications.

(Also reviewed in November)

**Circle 303 on Reader Service Card**

## SHOW REPORT...

(Continued from page 119)

### Molded Pulp Shapes

Keyes molded pulp shapes for interior packaging are claimed to cut costs and give products custom fitted protection. The molded pulp shapes can be made to suit almost any fragile or delicate product.

Keyes Fibre Co.

Circle 341 on Reader Service Card

### Photo-Electric Tape Control

Here's no-hand-and-no-feet tape dispensing. With the photo-electric remote control mechanism, an operator whose



hands are full need only lift a filled carton between the two photoelectric cells and the right length of tape is automatically dispensed. It can be set up for either vertical or horizontal application of tape. (Horizontal setup would be for conveyor line operation). The remote control dispensing control is used with a standard Marsh Twin-Taper and it allows for all normal adjustments.

Marsh Stencil Machine Co.

Circle 342 on Reader Service Card

### Ride-A-Man Trucks

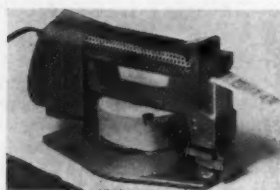
Moto-Truc low lift and high lift riding model trucks now offer several outstanding features: Center Wheel Drive and a free-floating riding compartment; Magic Circle Two-Wheel Steering; two-speed roller grip control on low lift trucks and three speeds on high lift models; the Moto-Truc Mobil-Mast which combines desirable features that are found in outrigger type trucks and counterbalanced trucks. These are all described in detail in Bulletin 56-R which was distributed at the show.

MotoTruc Co.

Circle 343 on Reader Service Card

### Portable Tape Printer-Dispenser

Designed to dispense a new "Per-venac" thermo-plastic packaging and labeling tape, the Nashua Thermo Taper is a portable hand-operated machine which features dry tape printing and



ready-to-use tape dispensing. In the machine, the tape is imprinted and activated by a heat unit. The tape is not sensitive to moisture and it may be stored for months or years before being used.

Nashua Corp.

Circle 344 on Reader Service Card

### Wooden Box Specifications

Specification I-50A, "Nailed Wooden Boxes for Bulk Shipment of Bolts, Nuts and Rivets," was distributed by the National Wooden Box Association at the show. It specifies sizes of boxes, materials to be used, dimensions of box parts, nailing, positioning of parts, and other pertinent details. It was prepared by the Association in cooperation with the Committee on Material Handling, Purchases and Stores Div., Assoc. of American Railroads.

National Wooden Box Association

Circle 345 on Reader Service Card

### Minimum Pallet Standards

Minimum standard specifications for warehouse, permanent or returnable wooden pallets have been prepared by the National Wooden Pallet Manufacturers Association. They deal with styles, designs and constructions, designation of pallet types, definitions, wood types, moisture content, decks, boards, stringers and blocks, fastenings and other factors.

National Wooden Pallet Manufacturers Association

Circle 346 on Reader Service Card

### Tube-End Covers

Lasticaps are sleeves, made of high-stretch wrinkled kraft, or dry waxed wrinkled kraft designed to lower cost on wrapping and covering rolls or cylinders of various materials. They may be supplied in any circumference size and in lengths up to 60 inches. Material can range from 30# basis kraft (before wrinkling) to 90# in either one or two ply.

Nichols Paper Products Co.

Circle 347 on Reader Service Card

### Heat Sealers

Heat sealers in sizes ranging from six-inch hand-portable models to a bench model 24 feet long are available from Packaging Industrial. The Sentinel

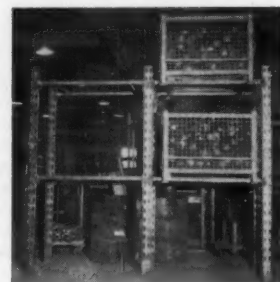
Jaw-type sealer is useful for sealing both coated and laminated barrier materials.

Packaging Industries Limited, Inc.

Circle 348 on Reader Service Card

### All-Adjustable Rack

Paltier's all-adjustable rack can be adjusted to any height, width, length and load capacity. Shelves can be ad-



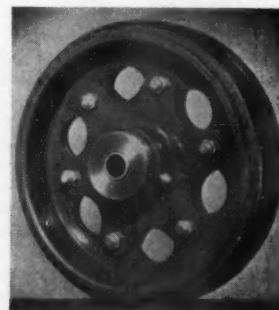
justed up, down and can be taken out by hand or by fork truck. Uprights are made of formed C-channels with tapered holes four-inches on center. Double hooks at each shelf corner provide wedge-type joints and insure rigidity and strength. A rack consists of only two different pieces, uprights and shelves. There are no other parts.

Paltier Corp.

Circle 349 on Reader Service Card

### Longer Life Wheel

New Construction principles are said to give Rapistan MB Wheels 50% longer life, 100% more rollability, 63%



lower replacement cost, and three to five-minute demountability. Steel V-Back design assures easier rollability and longer life by preventing squashing and flattening. When a tire wears out, you remove it from the hub assembly and replace it with a new tire. It is no longer necessary to stock complete wheels. Time required to change a tire is less than five minutes for unskilled workmen.

Rapids-Standard Co., Inc.

Circle 350 on Reader Service Card

### "Superstrong" Wirebound

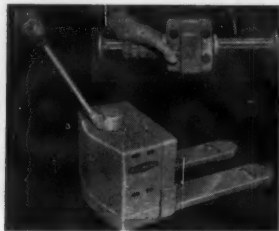
"Superstrong" wirebound pallet boxes

can be used on the production assembly line, as storage bins and as shipping containers. When used as a shipping container, they can be knocked down easily and returned for re-use. "Super-strong" wirebound pallet boxes are built to your individual needs and requirements.

Rathborne Hair and Ridgway Box Co.  
Circle 351 on Reader Service Card

#### Extra-Short Walkie

The Raymond Electric Walkie Truck is claimed to be the shortest of its type available, measuring only 20½



inches in length. The short length, together with a 200-degree steering arc, makes it exceptionally maneuverable and easy to operate. A new safety feature has been built into the handle of the truck to prevent the possibility of a worker being squeezed when operating in tight spots.

The Raymond Corp.  
Circle 352 on Reader Service Card

#### High-Speed Strap Dispenser

This mill-type dispenser is said to enable the shipping room to easily keep pace with today's high-speed produc-



tion lines. It is cited for its simplicity and safety in operation. A handy push-button enables the operator to control the length of strap fed through the cutter jaws. When the right length of strap has passed through, the button is released and the strap is halted. Strap is fed through the cutter jaws at the rate of six to 10 feet per second.

Signode Steel Strapping Co.  
Circle 353 on Reader Service Card

#### Tapes for Unitizing

Permcel Strapping Tapes are available in two types, "Permcel 15" for a

## Learn how to cut production costs!

Often, high-cost, manual methods may price a product out of the market. In most of these cases, up-to-date use of a USS Cyclone Processing Belt could do much toward lowering costs by eliminating needless manual operations. If you feel that hand-processing or time-consuming production methods are adding to your production costs, send for Cyclone's Processing Belt Booklet. You'll find it's packed with facts, pictures and helpful hints on how to lower costs through the effective use of metal Cyclone Processing Belts. The booklet is yours without obligation. Just mail the handy coupon . . . today.

#### CYCLONE FENCE DEPARTMENT

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION  
WAUKEGAN, ILLINOIS

#### MAIL THIS COUPON TODAY

Cyclone Fence, Dept. A-126  
Waukegan, Illinois

Please send me your big, illustrated  
Belt Booklet. No charge or obligation.

Name .....  
Company .....  
Address .....  
City ..... State .....

## USS CYCLONE METAL CONVEYOR BELTS

SPIRAL WOVEN  
FLAT WIRE • FLEX-GRID



UNITED STATES STEEL

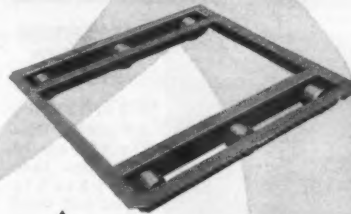
Circle No. 37 on Reader Service Card for more information  
DECEMBER, 1956

## PALLET ROLLERS



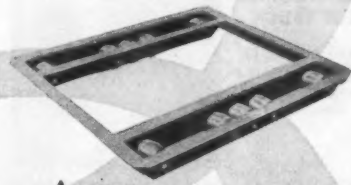
### ACE SWIVEL KING (360° Movement)

ASK FOR ENG. BUL. 104K



### ACE STEVEDORE KING (2 Way)

ASK FOR ENG. BUL. NO. 102K



### ACE REEFER KING (360° Movement)

ASK FOR ENG. BUL. NO. 103K



### ACE TURNABOUT (360° Movement)

ASK FOR ENG. BUL. NO. 106

## \* Distributorships Available \* FRANK L. ROBINSON COMPANY

Industrial Engineers • Manufacturers  
Distributors

LATHAM SQUARE BUILDING  
OAKLAND 12, CALIFORNIA

Circle 119 on Reader Service Card  
145

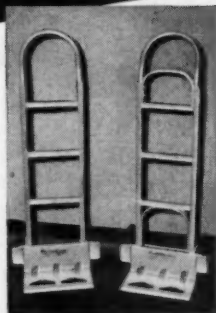


Made of Magnesium

## CUT TIME AND EFFORT ON THE JOB WITH LIGHTWEIGHT PUSHAROUNDS

### NEW PUSHAROUND HAND TRUCK

Light but strong—16 lb. model handles up to 350 lbs. —20 lb. model handles up to 450 lbs. 6" or 8" rubber-tired wheels.



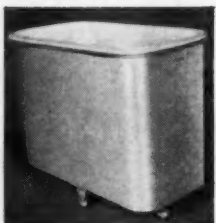
### PUSHAROUND PLATFORM TRUCK



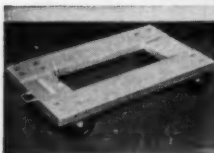
500 or 1200 lbs. capacity. Weighs up to 75% less than comparable wood and steel equipment.

### PUSHAROUND BIN TRUCK

Load capacity 500 lbs. Weight only 43 lbs.



### PUSHAROUND DOLLIES



Simple, rugged, lightweight Pusharound dollies for all purposes.

Constructed of light, strong magnesium, Pusharound handling equipment gives you ease of handling and long service life with minimum maintenance. Pusharounds cut handling costs for many users—they can do the same for you. Write for the Pusharound catalog today!

MH-12

Brooks & Perkins, Inc.

1944 West Fort St. • Detroit 16, Mich.  
Dealers in Principal Cities

# Pusharound

MAGNESIUM HANDLING EQUIPMENT

Circle 21 on Reader Service Card  
146

## SHOW REPORT

Continued

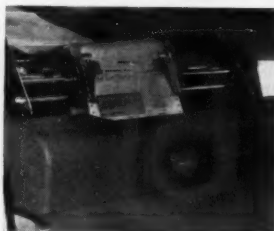
wide variety of heavy duty uses and "Permacel 16" for applications where unusual shock resistance is important. Permacel 15 is reinforced with glass strands and Permacel 16 with rayon strands.

Smith Scharff Paper Co.

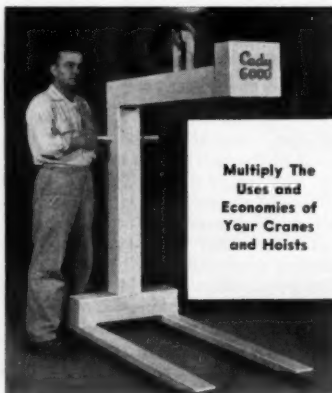
Circle 354 on Reader Service Card

### Time-Saving Marking Method

The Sten-C-Label method of addressing multiple shipping labels, tags and carton "Panel-labels" permits stencils to be prepared as a by-product of invoice writing. Shown here is the first system



involving pre-tabbed Sten-C-Labels on continuous five part forms over an IBM No. 403 Electric Accounting Machine. Because IBM printers do not have the



Multiply The Uses and Economies of Your Cranes and Hoists

## with NEW CADY PALLET LIFTERS

You can now handle palletized, skid and other unit loads quickly and easily with your cranes and hoists. Save time in areas not accessible to fork trucks. Counterbalanced to hang level, they speed up loading and unloading trucks, gondolas and barges.

Only 1/10th the Price of Fork Trucks

Used by the "Who's Who" of American industry. Standard models, with or without adjustable forks, up to 6,000 lbs. capacity. Tilt-back, ram and other custom models and capacities. Write for Specification Sheet No. 1056 and name of local distributor.

# CADY

METAL FABRICATING CO.  
78 Schenck St. N. Tonawanda, N. Y.

Manufacturers of Heavy Corrugated Containers and Custom Built Equipment

Circle 162 on Reader Service Card

# EXPENDABLE TITAN



Inserts available for level deck requirements

## ONE TON CAPACITY PALLETS

- 1 In actual use, save up to \$1, and more, per pallet load shipped.
- 2 Offers full rigid deck strength and economic advantages never before available.
- 3 Loads, secures and handles in every way currently employed with wooden pallets.
- 4 Eliminates return shipping costs, expensive inventory, control and bookkeeping systems.
- 5 Permit converting 75% of ordinarily allocated pallet storage space to more productive use.
- 6 No repair or maintenance.
- 7 End necessity for tying up capital in permanent pallet investment.
- 8 Stack loaded four-high.
- 9 Weigh only four pounds, can be manually handled with ease.

EXTREMELY SANITARY AND AVAILABLE IN BOTH FIRE AND MOISTURE RESISTANT MODELS.

DELIVERIES ARE BEING MADE.

FOR COMPLETE INFORMATION, WRITE TODAY!

# TITAN

PALLET COMPANY, INCORPORATED  
527 Madison Avenue, New York 22, N. Y.

\*The Keystone of Modern Handling

Circle 136 on Reader Service Card  
FLOW

stencil key as an ordinary typing equipment, it was formerly impossible to get a clearly cut stencil by imprinting through the ribbon. New Sten-C-Labls developed for equipment of this kind now have a special texture stencil paper which allows clean cutting even through a ribbon.

*Sten-C-Labl, Inc.*

Circle 355 on Reader Service Card

#### Pneumatic Strapper

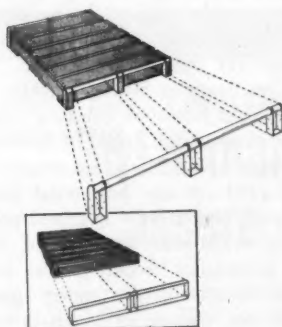
The new Stanley "Jet" features pre-set tensioning but is said to use less air pressure than comparable units. The "Jet", a four-pound tool, has unlimited strap take-up and a quiet motor with a built-in muffler that reduces whistling. Housed in magnesium, the strapper also features start-stop throttle control, one each on side and top, which are within easy finger-tip reach.

*Stanley Steel Strapping Div.,  
The Stanley Works*

Circle 356 on Reader Service Card

#### Life Insurance for Pallet End Boards

An answer to end-board failure, the greatest single cause of high mortality rate of wooden pallets, is offered by



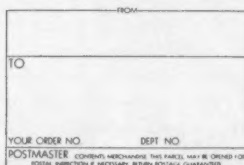
the Tier-Rack Pallet Guard. It is a bumper made of  $\frac{3}{8}$ " diameter electric welded steel tubing ingeniously fitted onto pallet ends to ward off damaging effects from impact of fork trucks in motion.

*Tier-Rack Corp.*

Circle 357 on Reader Service Card

#### Standard Pre-Cut Stencils

Stencils for Weber Duplicator-type hand stamps can now be purchased with standard, "ship to", "from", "to", and parcel post information already die cut into them. Formerly, it was necessary to have such information pre-



cut on special order. It is expected that now that they are stocked by Weber as standard items, prices will be lower and speed of order filling will be increased. A brochure illustrating all available standard "Kustom-Kut" stencils was distributed at the show.

*Weber Marking Systems*

Circle 358 on Reader Service Card

#### Wood-Paper Combination

Ply-Veneer, made of a fir veneer core, bonded cross-grain to tough kraft on both sides, is a strong, light-weight material with many packaging applications. Containers of many types are readily fabricated from Ply-Veneer and

the variety of constructions frequently permits the design of a container of exactly the strength needed for proper protection—without addition or unnecessary shipping weight.

*Weyerhaeuser Timber Co.*

Circle 359 on Reader Service Card

#### Versatile Cushioning Material

Tufflex Fabric is a felt-like sheet material made by a forming process where various combinations of cotton, wool, cellulose and other fibers are brought together with a binder to form a homogeneous mat. It is claimed to be clean, durable, resilient, dustless, odorless, workable and can be either

## NEW WALKIE powered lift truck offered in many models

**Walkie-Worklifter now features 1000 lb. and 1500 lb. capacities,  
with lifts up to 120".**

Every plant, small or large, has drums or crates or pallets or skids that can be moved and stacked more efficiently with one of these Walkie-Worklifters.

Such varied industries as steel, rubber, glass, textiles, plastics, paper, meat and bread use the Walkie-Worklifter to reduce costs and to eliminate lost time in departmental

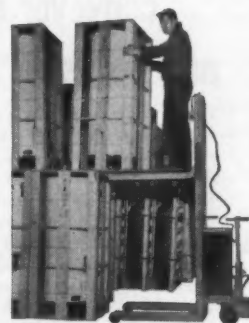
materials handling. Letters from satisfied users report savings of 50% or more in specific materials handling operations.

All models are priced low and include batteries and built-in charging unit. Get the full story on Walkie-Worklifters. Write today on your letterhead, outlining your requirements. Or, for your future reference, ask for bulletin No. W555.

**ECONOMY ENGINEERING COMPANY** (Established 1901) 4524 W. Lake St., Chicago 24, Ill.



Straddle base Walkie stacking photographic equipment.



Extension cord control enables operator to ride up with the load.



Effortless moving of 1000 lb. load →

Circle No. 45 on Reader Service Card for more information

## SHOW REPORT

*Continued*

hard or soft, flexible or semi-rigid loose or firm, water absorbent or water repellent.

*Wood Conversion Co.*

Circle 360 on Reader Service Card

### Shipping Bulky Loads

New ideas in heavy application of wirebound boxes and crates. Actual containers were displayed, to show ingenious interior design and full utilization of inherent advantages of wire-bound containers.

*Wirebound Box Manufacturers Association*

Circle 361 on Reader Service Card

### Hand Lift Pallet Trucks

Standard Yale Pallet Hand Lift Trucks are said to give all the operating features demanded by operators. They are available in capacities up to 600 pounds in hydraulic and mechanical multi-stroke types for use with double and single faced pallets.

*The Yale & Towne Mfg. Co.*

Circle 362 on Reader Service Card

## SCALES . . .

*(Continued from page 65)*

A cement plant, for instance, may feed as many as four different materials into a ball mill, using four belts controlled by feeders. Depending on the grindability of his materials, the system's operator can step up or slow down the rate of feed to the mill in order to maintain peak production. The voltage output of the master control mechanism is divided, equally or unequally as required, among four variable resistors in his master panel. They, in turn, control variable resistors on each feeder.

Memory controls can also be built into the system. Then, if the flow of materials from any one blending unit should decrease, the system would automatically re-proportion the flow from the other units, basing the proportions on the rate of the disturbed unit.

In another type of continuous proportioning and blending operation, a great number of ingredients may be accurately weighed and thoroughly mixed. A scale feeder for this purpose—here, to mix as many as 50 ingredients to produce a balanced livestock feed—is shown. The bank of feeders is sequence-timed so that material deposited on the horizontal belt by a previous feeder is mixed precisely with material dropped by the subsequent feeder, and so on. Feeders are of the rotary gate type, one feature of which is the easy incorporation of a motor-driven agitator for feeding materials which tend to "ball-up" or congest in restricted openings.

In the vertical gate feeder, shown installed in a flour mill, electro-magnetic clutches, energized by scale beam circuits, position the vertical gate to maintain constant feed by weight. This same basic equipment can be controlled by an air pressure system. A pneumatic relay develops air pressure proportional to weight on live weighing decks and transmits a signal to a pneumatic controller and receivers. Since air valves can be used to measure liquid levels, the pneumatic system provides continuous blending or batching control for processes requiring the mixture of bulk solids and liquids.

*(Continued on page 150)*

Here's a CONVEYOR BELT  
so **SOFT** that it's  
**HARD**  
to wear out!

## BUFFALO solid woven COTTON conveyor BELTS absorb impact and abrasion to SAVE YOU MONEY !

Hard, stiff, rigid conveyor belts will grind, groan and wear if your conveyor is the least bit bumpy, out of line or if objects are constantly dropped on the belt. That's not true with our solid-woven COTTON belts. These cotton belts are not rigid, are not hard! Consequently they absorb IMPACT without wear just like a pillow. They are so pliable that when they come to an irregularity in your line, they won't FIGHT IT . . . they just mold themselves around the obstruction and keep on going for years of EXTRA SERVICE. Plus all this . . . they will cost you a FRACTION of the PRICE you are probably paying for inferior performance. Available in REGULAR COTTON or a choice of six special COATINGS that resist acids, alkalies, grease, oils, heat, moisture and other deteriorating elements.



### WRITE FOR 14 PAGE MANUAL

on "How to Buy The Correct Belt for Your Conveying Job". Illustrates uses, Maintenance Tips, Sizes, Prices.

## BUFFALO WEAVING & BELTING COMPANY

202 CHANDLER STREET

BUFFALO 7, NEW YORK

NEW YORK

PHILADELPHIA

CHICAGO


DETROIT

LOS ANGELES

Circle No. 23 on Reader Service Card for more information



To Meet the Needs of Automation . . .



**SKILLED CRAFTSMEN** in new plant average nearly a decade of gear experience. General Electric gears, cut and finished with care, give longer, more rugged service.

At General Electric's **NEW Gear Motor and Transmission Components Department . . .**

## 3618 man-years of manufacturing know-how assure fast service on low-speed drives

To meet the increased demand for low-speed drives, General Electric's new decentralized Gear Motor and Transmission Components Department will be devoted solely to the design and manufacture of mechanical power transmissions.

●**Specialized Attention**—Highly trained and experienced gear-motor engineers and skilled craftsmen with over 3600 man-years of experience are available to help solve your low-speed drive problems. They are ready to give you fast, dependable G-E service on standards, on specials, and on new gear-motor products.

●**Complete Line Available**—General Electric offers a complete line of gear-motors—induction, synchronous, wound rotor, d-c gear-motors—in all types and enclosures, from 1/100 to 200 hp. The new department will also give you rapid service on special needs such as adjustable speed, braking, special mounting or special insulation.

●**Fast Service**—The expanded gear-motor facilities allow quantity production and shorter manufacturing cycles. Machine tools in the new factory are designed for high volume precision work and are

readily adaptable for the production of specials built to your specifications.

●**For More Information**—Write for bulletin GEA-6027, Section 851-2, Schenectady, N. Y., or contact your G-E Apparatus Sales Office or gear-motor supplier. Gear Motor and Transmission Components Department, General Electric Co., Paterson, N. J.

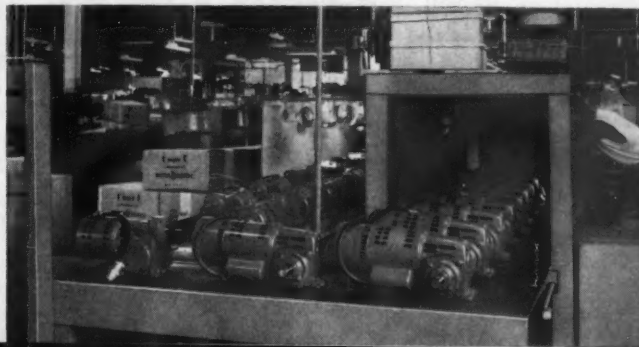
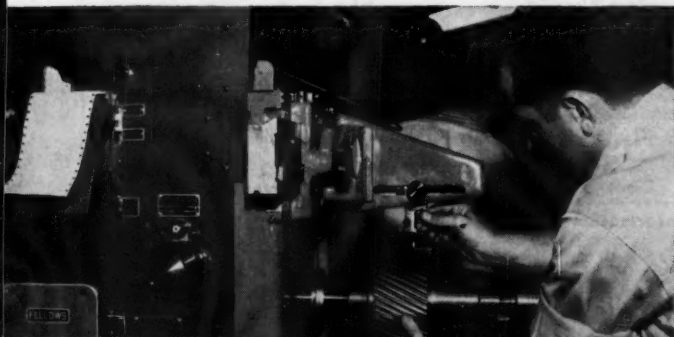
*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**

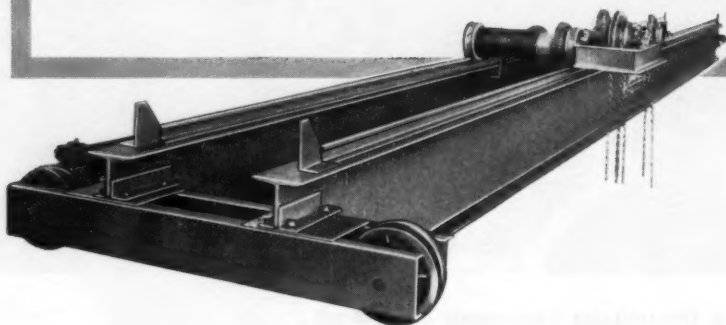
Circle No. 62 on Reader Service Card for more information

**CONTINUOUS TESTING** provides data for quality control, new designs and developments. Here, an involute measuring instrument records wear, under simulated tortuous conditions, to nearest ten-thousandths of an inch.

**QUANTITY PRODUCTION** of complete line of G-E gear-motors from 1/100 to 200 hp, in all types and enclosures, assures prompt customer service. Specify General Electric for all your low-speed drive needs.



# For Low-cost, efficient stand-by service . . . choose a 'Load Lifter' Hand Operated Crane



Type "BR" 'Load Lifter' Hand Operated Cranes are widely favored for intermittent and stand-by service because of features like these:

**TWO SPEEDS:** First, a safe speed for handling heavy loads. Second, a time-saving speed twice as fast for handling light loads or lifting and lowering the hook without load.

**EFFICIENCY:** The type of gearing used converts every possible ounce of muscle effort into useful work.

**SMOOTH OPERATION:** Maximum use is made of roller bearings. The big, grooved drum takes the full run of wire rope without overlapping.

**MAXIMUM SAFETY:** Double girder construction provides rugged strength. Automatic load brake acts fast—holds the load safely—lowering is always under perfect control. No tail chains hang down to foul the load. Operating chains are as far as possible from the load.

**LOW MAINTENANCE:** Built of the finest materials, with design and workmanship of the same high quality as the most expensive heavy-duty cranes we manufacture.

If you want the convenience of a reliable, long-life crane for occasional lifting and moving jobs, investigate the Type "BR" 'Load Lifter' Hand Operated Cranes. Capacities: 3 to 50 tons. Lifts: 28 to 37½ feet. Spans: 15 to 60 feet. Ask your "Shaw-Box" Distributor for details or write for Catalog 218C.



**'Load Lifter'** HAND OPERATED CRANES

**MANNING, MAXWELL & MOORE, INC.**  
MUSKEGON, MICHIGAN

Builders of "SHAW-BOX" and "LOAD LIFTER" Cranes, "BUDGIT" and "LOAD LIFTER" Hoists and other lifting specialties. Makers of "ASHCROFT" Gauges, "HANCOCK" Valves, "CONSOLIDATED" Safety and Relief Valves, "AMERICAN" and "AMERICAN-MICROSEN" Industrial Instruments, and Aircraft Products.

Circle No. 92 on Reader Service Card for more information

## SCALES

*Continued*

Frequently, in processes involving liquids, operating conditions are corrosive, abrasive, vibratory or dusty. In such situations, a pneumatic scale is often indicated. This is a platform scale utilizing flexure members instead of knife edges. The indicator dial and operating controls may be installed at a convenient, remote location.

An accompanying drawing shows a system for weighing an ingredient into a tank—then discharging it to the process.

The operator depresses the "fill" button which starts the filling pump and opens the fill control wide. As the correct weight—as previously set by the batch set adjustment—is approached, the fill valve is "throttled" or gradually closed by the pneumatic relay. When the exact weight is discharged into the tank, the differential pressure switch stops the flow completely.

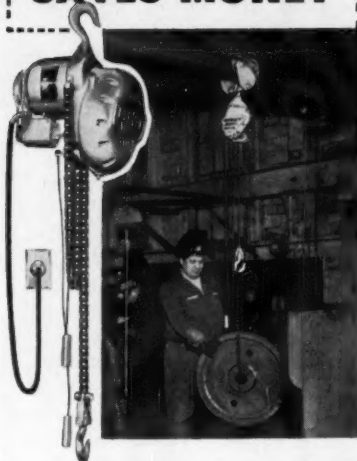
This system shows a sharp cut off for filling control preceded by throttling type control to get maximum precision of batch weight. If an inaccuracy of ½ percent batch can be tolerated, the pneumatic throttling control alone will suffice. Such a system can be made all-pneumatic with snap acting air valve and air starting button if required.

## High Speed Packaging Control

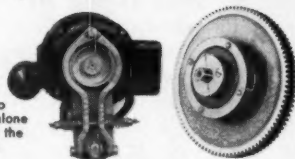
A new system of high-speed, precision weight control installed in Anheuser-Busch, Inc. plants at St. Louis, Mo., and Old Bridge, N. J., guarantees full weight in each package. Heart of the system is a printing conveyor scale. It is fully automatic, requires no supervision. In just 8¼ seconds, it weighs, counts and makes a permanent printed record for every 50 pound carton of yeast leaving the packaging department, thus permitting a new carton to move along the conveyor belt to the shipping department every nine seconds.

Should any of these cartons fall below a specified weight, including allowances for evaporation and

**LIFTS FAST**  
**LIFTS SAFELY**  
**SAVES MONEY**



Either of these two brakes alone can hold the full load



You always get that kind of performance from the 'Budgit' Electric Hoist. It speeds heavy lifting between processing operations, so more units can be turned out per day. Its two powerful, automatic brakes act together—assure "hair-line" starts and stops to position parts in machines or for assembly. The load hook cannot overtravel because safety stops set the brakes. Yes, the 'Budgit' is extra strong and extra safe. Man, load and hoist are protected.

The money-saving 'Budgit' Electric Hoist is portable—hang up, plug in and operate! Capacities: 250 to 4000 lbs. AC and DC models. \$149 up. Call your Shaw-Box Distributor for details or ask us for Bulletin 402.



**'BUDGIT' CONDUCTOR CORD TROLLEYS** are available for I-beam installation to keep flexible electric cord up and away from work and worker. Roll smoothly around curves, through switches.



**'Budgit' ELECTRIC HOISTS**

**MANNING, MAXWELL & MOORE, INC.**  
MUSKEGON, MICHIGAN  
Builders of "SHAW-BOX" and "LOAD LIFTER" Cranes, "BUDGIT" and "LOAD LIFTER" Hoists and other lifting specialties. Makers of "ASH-CROFT" Gauges, "HANCOCK" Valves, "CONSOLIDATED" Safety and Relief Valves, "AMERICAN" and "AMERICAN-MICROSEN" Industrial Instruments, and Aircraft Products.

Circle 93 on Reader Service Card  
DECEMBER, 1956

packaging materials, the scale actuates a series of visual and audible alarms in various parts of the plant, and the carton is automatically marked by a solenoid-operated crayon for separation and eventual return to the processing department. A similar series of alarms is set off if the carton should exceed weight allowances.

After processing, baker's yeast is wrapped in one-pound cakes and packed automatically—50 cakes at a time—into cartons. These cartons move along a conveyor belt to the glueing and sealing machine, are spaced mechanically at nine-second intervals and then are relayed to the printing scale. (After weighing and counting they are finally sent to the shipping department for delivery.)

As each carton on the conveyor approaches the scale, it is picked up by an inclined power belt and fed to the weighing platform via a roller track. Just before reaching the platform, however, it passes over a cycle start switch, and the intricate mechanism of the scale is placed into instant operation.

The carton is stopped in the correct weighing position on the platform by a ball-bearing, spring-loaded stop-gate. The dial indicator is "zeroed" at the 47 pound 6 ounce mark and adjusted to go no farther than the 52 pound mark in order to reduce indicator travel, overshoot and hunt time. It quickly registers the carton's correct weight, coming to rest in seven seconds. Within  $8\frac{1}{4}$  seconds after the start switch was first tripped, the cycle is completed and the weight of the carton is recorded on a continuous tape wound inside the scale enclosure. The carton is then electrically counted on a remote panel board located in the production office.

At this point, a lower solenoid is actuated and the stop gate is raised, allowing the carton to roll off the inclined roller-track platform and continue on its way toward the shipping department.

That is the normal process.

But when a carton is found to be underweight, a red light flashes at the scale and another red light flashes and a horn sounds in the plant's production room. At the same time, a solenoid-operated lever performs two operations:

# New

## TEN TON\* CAPACITY

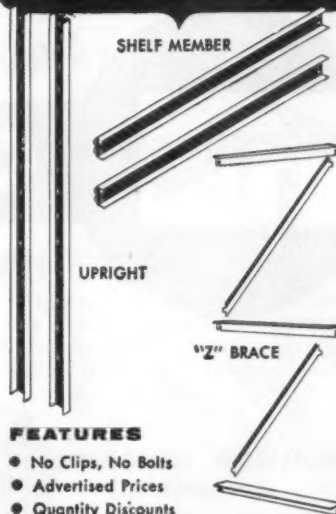
The Boltless Pallet Rack

AS LOW AS \$8.35 PER PALLET OPENING\*\*



\*15-20 and 25 TON CAPACITIES also available. Prices on request

### THREE BASIC PARTS



#### FEATURES

- No Clips, No Bolts
- Advertised Prices
- Quantity Discounts
- Erected in 10 minutes
- No sway in any direction
- Adjustable Shelf on 9" Centers
- No back braces—front or back entry
- Each Shelf independently adjustable

\*\*PRICE AT MAXIMUM QUANTITY DISCOUNT

DISTRIBUTED IN PRINCIPAL CITIES

### RACK ENGINEERING COMPANY

131 SIXTH ST., CONNELLSVILLE, PA.  
Plants: Conneltsville, Pa. • Gardena, Calif.  
Farnham, Canada • Slough, England

Circle 114 on Reader Service Card  
151



**newly  
introduced  
model**

**VH4**



30 hp. VH4 with clutch assembly.

## WISCONSIN ENGINE

Long a Wisconsin Heavy-Duty Air-Cooled Engine user, Hyster Company, Portland, Oregon, is one of the first using the 30 hp. VH4 on the newly introduced Model QC-20, offering these advantages:

- Advanced "VEE" design ...providing more power with no increase in size.
- Even-firing, lead-holding high torque.
- Traditionally rugged construction, plus time-tested features.

*specified  
for* **HYSTER**

Write for complete data on this great new engine Bulletin S-196.

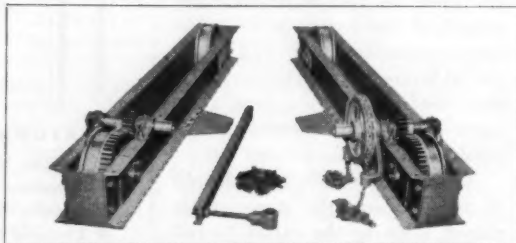


BELOW: Top Running Crane Assembly

**BUILD IT YOURSELF**

# CONCO

**HAND GEARED CRANE**



**TOP RUNNING OR UNDERHUNG — 1/2 TO 5 TON**

Build profit-making, factory quality cranes from these Conco assemblies and save time, shipping and labor costs. Packages include full instructions, all parts except locally available Beam and cross shaft. Can equip with Conco chain or electric hoist. Write for Bulletins 2200 and 2300 and name of local distributor.



**CONCO  
ENGINEERING  
WORKS**

Division of  
H. D. Conkey & Company  
38 Grove St., Mendota, Ill.

Affiliates: Conco Engineering Works—Domestic Heating Equipment  
Conco Building Products, Inc.—Brick, Tile, Stone

Circle No. 35 on Reader Service Card for more information

## SCALES

*Continued*

(1) its upper end trips a lever on the mechanical counter, thus counting the carton as underweight at the scale; and (2) its lower end, to which a crayon is attached, marks the carton for eventual separation in the shipping room. In addition, the carton is electrically counted as underweight on a remote panel board.

If the carton is found to be overweight, a green light flashes both at the scale and in the production room, and a gong also sounds in the production room. The carton is then counted as overweight on the remote panel board.

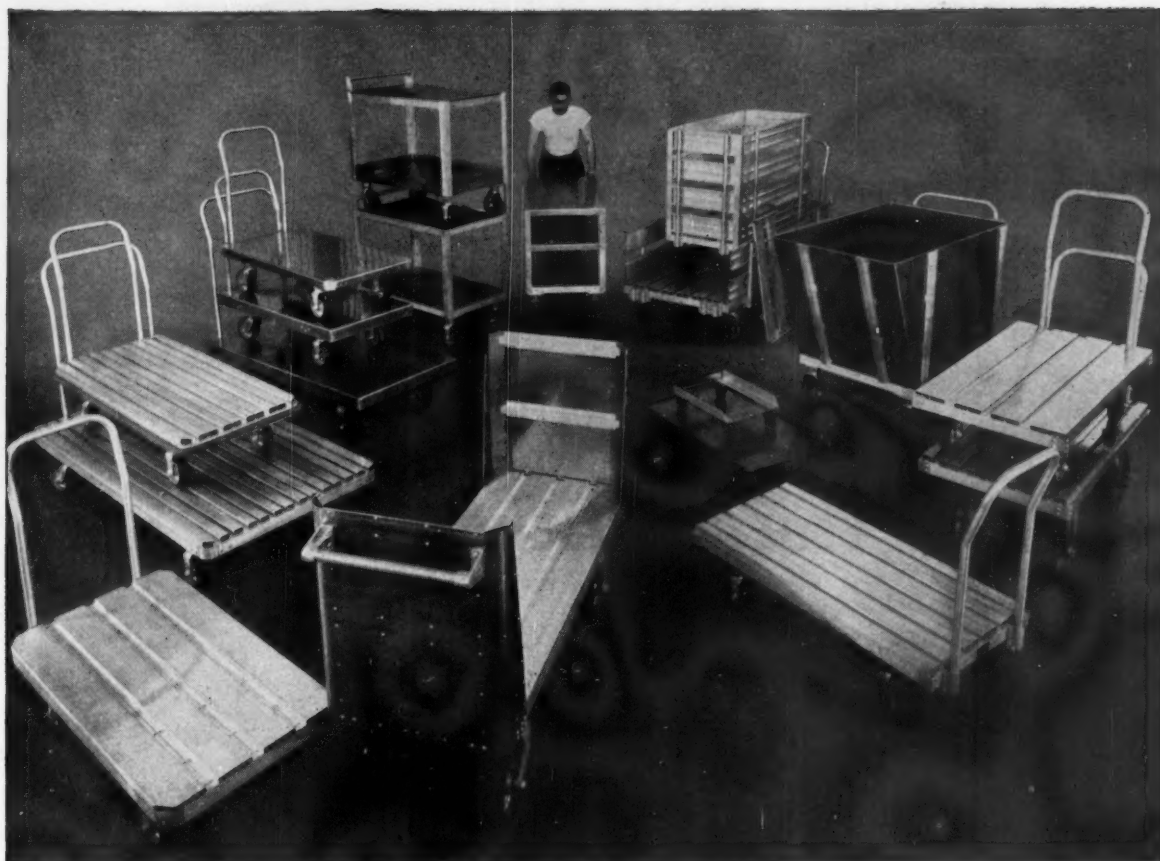
The underweight cartons of yeast, with their crayon marks clearly visible, are separated in the shipping room as they are taken from the conveyor. They are then unwrapped and sent back to the processing department.

The remaining cartons are palletized for pre-delivery storage and go out of the plant with a guarantee by Anheuser-Busch, Inc., that they contain a full 50 pounds plus of yeast.

For pictures and data, FLOW thanks the following firms: ABC's Scale Division; McDowell Company, Inc.; The E. W. Buschman Co.; Detecto Scales, Inc.; Fairbanks, Morse & Co.; The Howe Scale Co., Inc.; Pennsylvania Scale Co.; Richardson Scale Co.; Toledo Scale Co.; Wallace & Tiernan, Incorporated; and Weighing & Control Components, Inc.

## Navy Dept. Seeks Civilian Personnel

Mechanical Engineers, electrical engineers and naval architects are needed by the U. S. Navy, for review of shipbuilders' design plans. Persons interested should have at least three years of experience. A degree is desirable, but applicants without a degree will be considered if they have had proper experience. For further information send a brief resume of education and experience to: Personnel Office, Office of Supervisor of Shipbuilding, U. S. Navy, Camden 1, New Jersey.



## Magcoa/Tobey lightweight aluminum trucks —

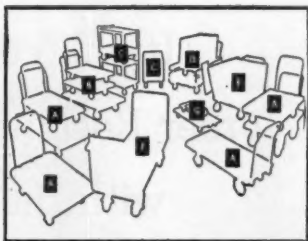
## Made for special jobs... sold as standard equipment!

Magcoa/Tobey aluminum trucks solve all kinds of problems. Because we have a wide range of styles and sizes, chances are there is a *standard* truck to solve your *special* problem.

Most important of all, Magcoa/Tobey trucks save you money—are the most efficient and economical to operate. Lightweight aluminum construction completely eliminates cumbersome dead weight. Magcoa/Tobey trucks start, stop, and steer quicker and easier.

Revolutionary swivel casters provide free-swivel action under full load; increase efficiency, assure maximum maneuverability. Full range of caster sizes and wheels-and-tire types for every load and floor condition.

In short, Magcoa/Tobey trucks cut those truck costs which mean the greatest savings to you: the cost of *moving* the truck!



**A.** Flat bed trucks—extrusion decks—round or square corners—dozens of sizes. Tops in shock-absorbing flexibility.

**B.** Flat bed trucks—flush decks. The ultimate in lightness and freedom from crevices.

**C.** Multiple deck trucks—Masonite or sheet aluminum decks—many varieties and sizes.

**D.** Removable sides and ends, couplers, hitches and other standard accessories available on most styles.

**E.** Bin trucks and other enclosed designs as specified.

**F.** Fixed end trucks—for baggage handling and similar jobs.

**G.** Dollies and other specials.

There is something new in trucks. Get the full facts from the new Magcoa/Tobey Data File. It shows the dozens of types and hundreds of sizes available to help solve your special problem. No obligation. Use the handy coupon.

### MAGNESIUM COMPANY OF AMERICA

#### TOBEY ALUMINUM DIVISION

East Chicago 1, Indiana

Representatives in Principal Cities

☐ Please send Magcoa/Tobey Data File

Name and title \_\_\_\_\_

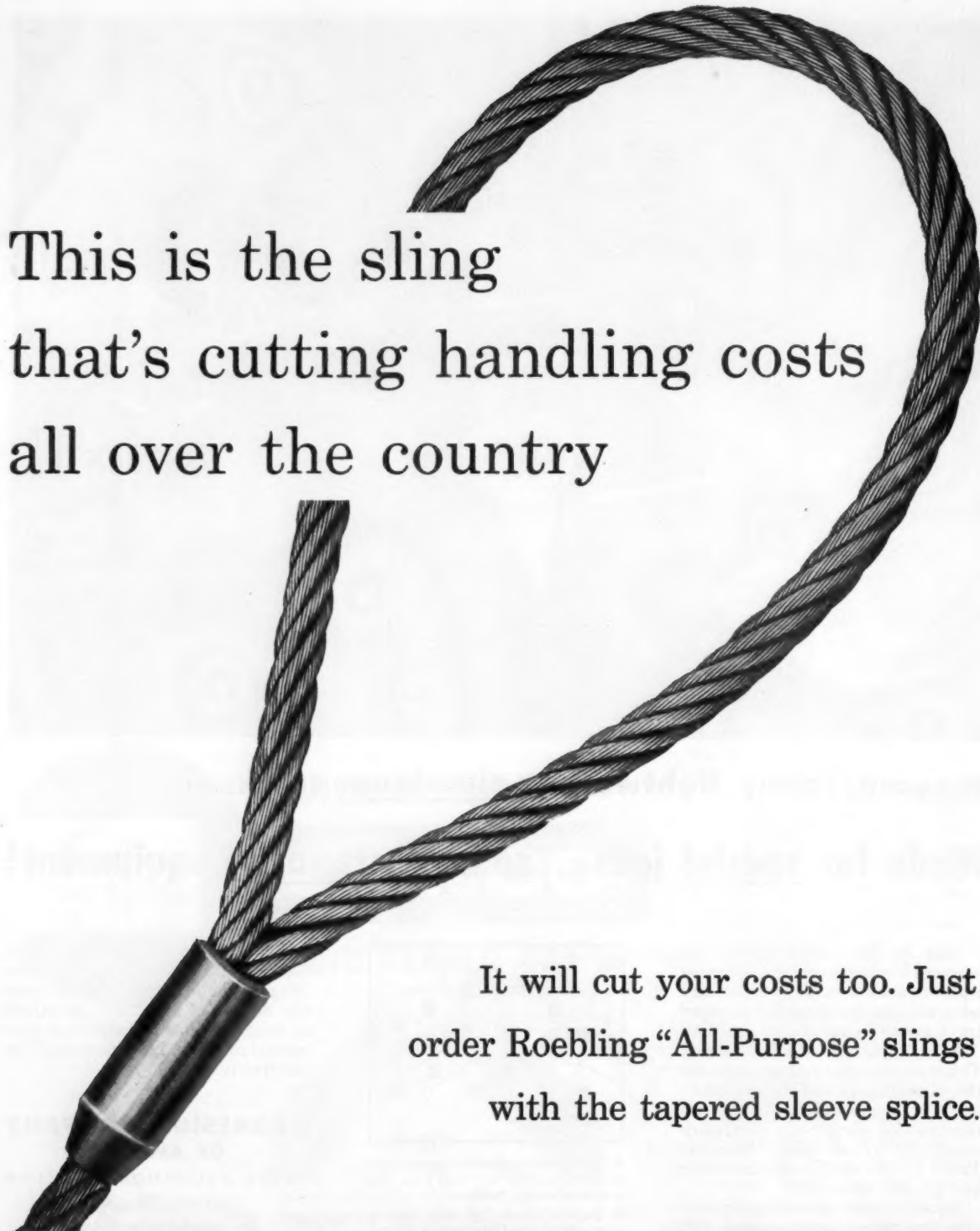
Company \_\_\_\_\_

Address \_\_\_\_\_

City-Zone-State \_\_\_\_\_

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Circle No. 91 on Reader Service Card for more information



This is the sling  
that's cutting handling costs  
all over the country

It will cut your costs too. Just  
order Roebling "All-Purpose" slings  
with the tapered sleeve splice.

# ROEBLING

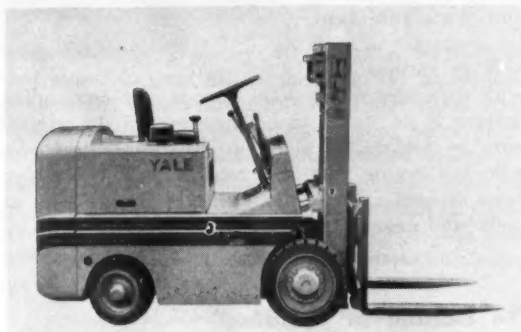
*Subsidiary of The Colorado Fuel and Iron Corporation*

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • PITTSBURGH, 1723 HENRY W. OLIVER BLDG. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6, N. Y.



Circle No. 120 on Reader Service Card for more information





#### Won't Fail in Dusty Areas

Five features of a new gasoline powered lift truck, introduced by Yale & Towne Manufacturing Co., lend the unit to trouble-free operation in locations containing atmospheric abrasives. The truck has enclosed generator and voltage regulator, heavy duty oil filter, dry type and oil bath air filters, and bottom deflector.

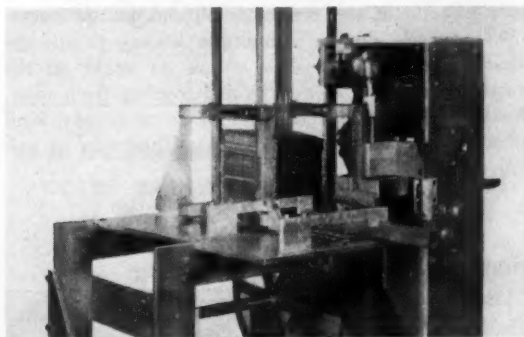
Circle 165 for more information



#### Conveyor Has Self-Elevating Device

A portable belt conveyor with a self-powered elevating device has been introduced by The Colson Corporation. The unit rises and locks to any angle up to 45°, and has a capacity of 150 pounds per package or 300 pounds fully distributed. It is available in lengths of 10 to 22 feet. Belt width is 14 inches.

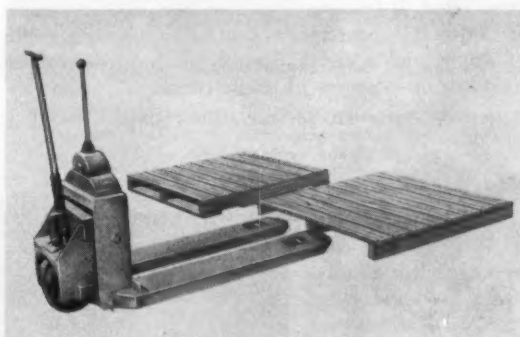
Circle 167 for more information



#### Carton Printing Accessory

A new marking, dating and coding device for attachment to Ceco and similar packaging machines is introduced by the Industrial Marking Equipment Company of Brooklyn. The unit feeds cartons automatically from an adjustable magazine, through imprinting and into the sealer.

Circle 166 for more information



#### Complete Hand Truck Line

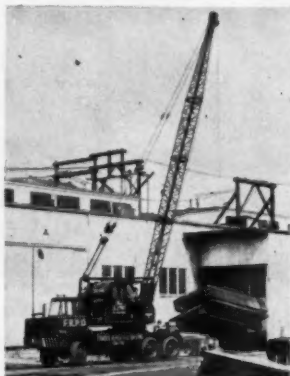
A complete line of Load-Lift pallet and skid trucks is now offered by the American Pulley Company. These manually operated hydraulic trucks are designed for a variety of handling operations, and are available with capacities ranging from 2000 to 6000 pounds.

Circle 168 for more information

## NEW EQUIPMENT SECTION

### Completely Redesigned Truck

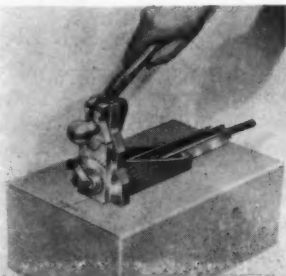
A completely new and redesigned truck, incorporating the Clark Power Train, is featured in the Michigan Model T-20 excavator-crane introduced by the Construction Machinery Division of Clark Equipment Co. The vehicle has a gross weight of 42,300 pounds, and can be reduced to 37,600 pounds by removing rear outriggers, crane boom and counterweight. Maximum boom length is 80 feet, with jib booms of 10 or 15 feet. With a 134 hp gasoline chassis engine, maximum travel speed is 35 mph. Hydraulic steering booster and all-wheel air brakes are provided. The upper mechanism is powered by a 75 bhp engine.



Circle 169 for more information

### Carton Closing Stapler

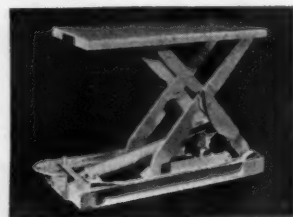
Carton-closing equipment at new low prices is now offered by the International Staple and Machine Co. The International Hand Boxer Stapling Machine permits closure from the outside of the carton after it has been filled. It features an adjustable penetration control to regulate depth of staple, and a clinch control which predetermines tightness or looseness of staple clinch.



Circle 170 for more information

### Has 4000 Lbs. Capacity

A new portable lift table, small and compact enough to fit between the legs of any standard skid, has been introduced by Southworth Machine Co. The Strongback lift table is designed to elevate skid or palletized loads to correct feeding, working or positioning heights. Collapsed height is only 7¼ inches, and platform dimensions are 24 x 53 inches. Its capacity is 4000 pounds, with a stroke or

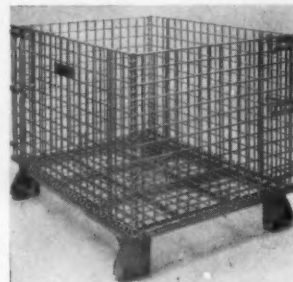


lift of 30 inches. The unit provides free access to the work from all angles at all times, and it may be dollyed from location to location for variety of uses. It is powered by a 115 volt ac motor. Hand and foot switches are provided.

Circle 171 for more information

### Collapses to 1/5 Size

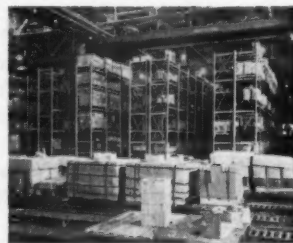
A new palletized container has been designed by Springpot Steel Products Company. Called the Wire-Tainer, the unit is designed for convenient parts handling, storage and shipping. Durable and shock resistant, the container is available in various sizes, with capacities up to 4000 pounds. An outstanding feature is its ability to collapse to 1/5 its original size, by folding the sides inward. Sturdy legs provide fast tying with fork trucks. Such special features as hook eyes for crane lifting, divided sides or ends, and casters are available.



Circle 172 for more information

### No Bolting or Welding

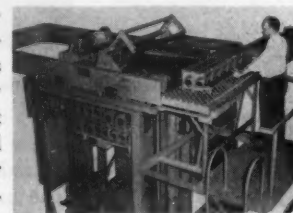
Newly designed adjustable pallet racks are now in manufacture by Palmer-Shile Company. For use in plants and warehouses, these racks may be easily assembled without bolting or welding. Adjustable members lock in place at any desired level, and can be assembled in single, double or multiple sections to any desired height. Double slots set on an angle on the vertical uprights give rigidity and freedom from sway. Racks are built to specifications to store any kind of material—light, heavy or bulky. They may be galvanized for outside use.



Circle 173 for more information

### Semi-Automatic Pallet Loading

Designed for stacking cartons or flattened bags on pallets in any pattern, the new semi-automatic pallet loader manufactured by Mathews Conveyor Co. simplifies palletizing operations in a wide variety of installations. Stacks of empty pallets



are loaded into the dispenser by fork truck. The containers are received from a conveyor line, arranged into layers by an operator, and placed on the pallet in a predetermined number of layers. Fully automatic pallet loaders are also available.

Circle 174 for more information

### Drums On Pallets



A drum and barrel truck, which is said to make it possible for one operator to easily place heavy drums on pallets, is being manufactured by Valley Craft Products, Inc. Ezy-Roll Barrel Cart, as it is called, is designed to allow the

truck's shoes to be placed on the edge of the pallet so that in one forward motion the drum can be elevated to the pallet with a minimum of operator effort. Also featured is a spring operated chime hook which drops over the barrel edge as the truck is moved against the barrel without the operator touching either the hook or the barrel. The barrel truck is available in either steel tubing or aluminum. Wheels are equipped with ball bearings, and solid tires or pneumatic wheels are optional.

Circle 175 for more information

### Tractor Follows White Line



A new optical guidance system for the Guide-O-Matic industrial tractor has been announced by Barrett-Cravens Co. In place of the guide wire embedded in the floor in conventional Guide-O-Matic systems, this new method requires

only a painted line or a white tape on the floor, to transmit guidance to the tractor. Light emanating from a small, low-power bulb in the "sniffer" box reflects from the white line on the floor, and actuates photo-electric cells in the box. Thus the tractor steers accurately in the direction of the line at all times.

Circle 176 for more information

### Makes Roadway Over Hoses



New, portable hose ramps manufactured by Copperloy Corporation make a smooth roadway for plant traffic to pass over fire hose, fuel lines, air hoses, etc. up to four

inches in diameter. Each ramp is made of lightweight

### 18 STANDARD MODELS

Three Standard Fork Lengths

36", 42", 48". Fork widths  
20 1/2" or 27".

Standard Capacity

4600 lbs.

TO BE MADE IN AMERICA BY

**COLES CRANES, INC.**

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Joliet, Ill.

IN CANADA:

Electro-Hydraulics (Can.) Ltd.

18 Ingram Dr. Toronto 9, Ont.

CHerry 1-1551

MADE IN ENGLAND BY  
Omic Ltd., 9 George St., London W.1

## The PALITON Hand Pallet Truck

- Maximum manoeuvrability: full 180 degrees steering lock.
- Easy running: each wheel and roller has two ball bearings.
- Full FIVE INCH LIFT • Overloading prevented by pre-set relief valve • Three-way control-raise lower and NEUTRAL, giving a free handle for towing.



Circle No. 108 on Reader Service Card for more information



## NEW EQUIPMENT SECTION

magnesium, and constructed to give rigid support for loads up to 10,000 pounds. Diamond safety tread provides good traction under any conditions. Pairs of ramps are held together by heavy neoprene belting to give flexibility on rough terrain, and to allow easy folding for storage. Special filler strips serve as ramp extenders to make a longer roadway when multiple hoses must be crossed.

Circle 177 for more information

### Adapted to Heavy Industrial Work

Designed for comfort and convenience of the operator as well as mechanical improvements, the new 600-series wheel tractors, developed by International Harvester Co., are especially adapted to heavy industrial work. The new tractor is available either as the gasoline International or the International 600 diesel. According to the manufacturer, the new 600 is especially designed to pull heavy loads, handle big jobs, and do them easier, faster, and better than any of its predecessors. The new tractor is equipped with Hydra-Touch; easier steering; a large, roomy platform for the operator; crown type fenders; complete cowl shielding; roller-type swinging drawbar; improved cold weather diesel starting; and the very latest instrument panel.

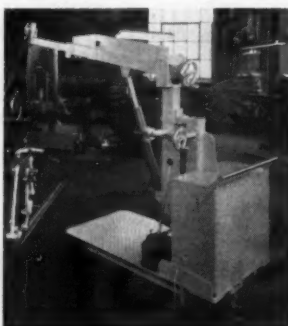
Circle 178 for more information



### Precision Boom Control

A new type of boom truck, the Hydro-Boom, offers complete handling ease and precise placement of work loads by means of machine tool precision control of boom movement, vertically, longitudinally and crosswise. Manufactured by Vanguard Engineering Co., the Hydro-Boom has a lifting capacity of 2500 pounds, and offers compactness of design. The boom reaches 42 inches beyond the front of the truck, so that the counterbalanced truck body does not have to be placed under the load to be lifted. Straddling the load is also eliminated. It is available in hand-operated or battery-powered models.

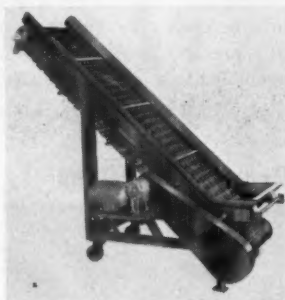
Circle 179 for more information



### Heavy Duty Conveyor

Cooney Industries, Inc. now manufactures a heavy duty conveyor equipped with a heavy duty wire mesh belt, and designed especially for handling heavy man size loads. The unit will handle hot forgings with ease. Heavy objects with slick surfaces or of awkward shape present no handling problem, asserts the manufacturer. To provide ease of handling, the conveyor comes equipped with casters and handles conveniently placed on each side. The wire mesh belt is available in a variety of weaves, and with an spacing and size of flight. Motors are available in all standard voltages.

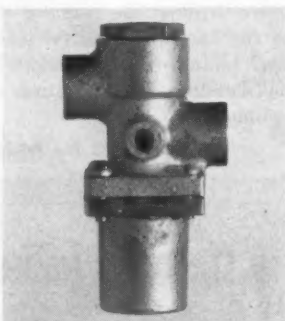
Circle 180 for more information



### Controls LP-Gas Pressure

An automatic LP-Gas tank pressure regulator, offered by Clark Manufacturing Company, automatically reduces tank pressure when the tank is subject to a hot operation. It eliminates hazards created by relief valve action, especially on inside operations, and eliminates the necessity for bleeding excessive pressure while filling tanks. There are no adjustments or compensating devices on the valve. According to the manufacturer, the elimination of fluctuating regulator pressure provides more efficient carburetion, which decreases fuel consumption.

Circle 181 for more information



### Two New Controllers

The Wheelco 150 and 151 series non-indicating controllers are now offered by the Wheelco Instrument Division of Barber-Coleman Company. The 150 is a potentiometer type unit designed for control applications in batch process work. The 151 is a simple on-off controller for applications where transfer lag and dead time can be reduced to a negligible value and the simplest control forms made usable.

Circle 182 for more information



## Two-Way Radio for Vehicles

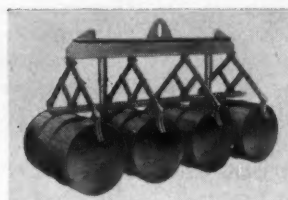


New two-way radio equipment designed for material handling vehicles has been introduced by Radio Corporation of America. The mobile equipment can be used on either gasoline or electric powered trucks. The radio unit features

6 to 12 volt convertibility for gasoline vehicles, and 24, 32 or 36 volt conversion for electric vehicles. All models have controls, loudspeaker and microphone mounted in front of the driver, and choice of horizontal or vertical mounting is available. A noise-cancelling microphone and re-entrant speaker screen out surrounding plant noise.

Circle 183 for more information

## One Man Drum Handling

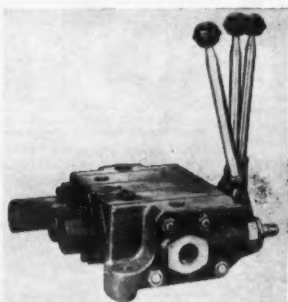


One man handling of drums is possible with the new Downs Horizontal Drum Lifter, says the manufacturer Downs Crane & Hoist Co. Automatic grab handles can raise

from three to six drums with each lift, making the handling and storing of drums a fast, easy job. In picking up a load, the grab is spotted over the drums and lowered until the hooks engage the drum ends. To release the drums, the grab is lowered until the center bar forces the hooks open. A short end movement of the grab moves the hooks so the drum lifter may be hoisted clear of the drums. One hoist operator can handle the whole job.

Circle 184 for more information

## Multi-Directional Control Valves



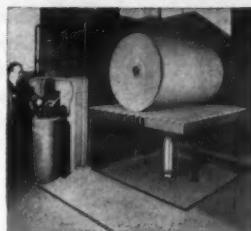
Manufactured by the Commercial Shearing & Stamping Co. are multi-directional hydraulic control valves for continuous duty at pressures as high as 2000 psi. A positive "no-load-drop" non-restricting check in each operating action section is said to be a

major feature of the new line. Other features include greatly reduced resistance to flow through internal passages, sealing by O-rings instead of gaskets, and a unique cartridge-type relief valve. The valves are available with  $\frac{1}{2}$ ,  $\frac{3}{4}$ , or 1 in. work ports, with nominal capacities of 20, 35 or 60 gpm respectively.

Circle 185 for more information

# SPEED MATERIAL HANDLING with JOYCE HYDRAULIC...

## ...MATERIAL LIFTS



save floor space...  
save manpower

Joyce single or multiple post "Materiallifts" will be engineered to fit your requirements as to size and type of platform, lifting capacity and type of controls. Available with air-oil or electric pumping unit operation . . . always locked on oil for greatest safety.

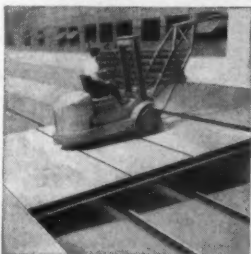
## ...VARI-RAMPS



simple to install...  
economical to operate

These compact units feature roll-over capacities to suit. Available in two types . . . electric pumping unit and air-oil operated . . . push button, hand or foot valve control . . . automatic leveling. Joyce "Vari-Ramps" are manufactured with platform sizes and vertical movements to your specific requirements.

## ...CROSS-OVER BRIDGES



custom built to meet  
your requirements

Joyce cross-over bridges are available in the following styles, Bascule type, Vertical rise type and Horizontal rotating type. They are available with platforms of shape, size and capacity to meet your requirements . . . full hydraulic air-oil or electric pumping unit operation . . . push button, hand or foot valve control.

Also manufacturers of a complete line of Elevator Components, Hydraulic Feed Tables, Factory Truck Lifts and Industrial Jacks. Suppliers of heavy duty lifting equipment to world industry since 1873!



WRITE TODAY FOR  
COMPLETE INFORMATION!

IN CANADA: Midland Foundry  
& Machine Co., Ltd., Midland, Ontario

**THE JOYCE-CRIDLAND CO.**  
DAYTON 3, OHIO

Circle 159 on Reader Service Card for more information

## NEW EQUIPMENT SECTION

### Imprints on Standard Machine

A compact imprinting attachment for simple installation on any standard wrapping or bundling machine, has been announced by Adolph Gottscho, Inc. Designed for imprinting any changeable legend as an integral part of the packaging operation, the Gottscho imprinter incorporates a flexographic printing system that uses fast-dyeing inks of any color. Operation is completely automatic and can be synchronized with the parent machine at any speed. The unit is available in various sizes to produce imprints up to 24 inches wide.



Circle 186 for more information

### Detects Tiny Leaks

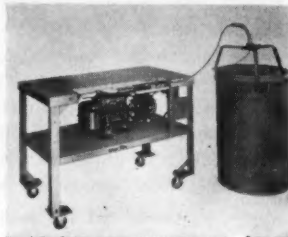
Automatic, high-production leak testing is now possible with a modification of the General Electric

Type H-1 leak detector. The hand-held "gun" of the standard model has been replaced with a fixed head for attachment to the conveyor belt of mass-produced products. Minute but costly leaks can now be caught on the assembly line in articles ranging from bug bombs to beer barrels. In general, any container which can hold a small quantity of halogen under pressure is a suitable application.

Circle 187 for more information

### Tying Machine Has New Features

Featuring an automatic twist-tie, the new Inland Speed-Flo Model 1200 portable, semi-automatic tying machine is engineered to heavy duty production standards. Added strength and wear characteristics have been engineered into the design, with resulting minimum maintenance. The automatic twist-tie unit is easily accessible for adjustment. The tying head can be conveyor-mounted to satisfy individual needs. According to the manufacturer, Inland Wire Products Co., the unit is capable of as many as 20 ties per minute, and bundle sizes unlimited within the 19 through 16 gauge range.



Circle 188 for more information

## ON-TIME MAINTENANCE MEANS:



- Better Performance
- Fewer Repairs
- Less Down Time
- Longer Equipment Life

### HOBBS Engine Hour METERS

Take the guesswork out of protective maintenance! Know WHEN it's time to change oil ... replace filters ... lubricate ... overhaul, etc.

The HOBBS Engine Hour Meter is an accurate electrical timing instrument which records HOURS and MINUTES of running time of all types of powered equipment ... tells WHEN maintenance is due. Not a revolution counter. Two models — direct-reading (upper illustration) and pointer type. Ruggedly built ... easy to install ... low in price. See your factory branch, representative or distributor ... or WRITE:

**John W. Hobbs Corporation**  
2061 YALE BLVD. SPRINGFIELD, ILLINOIS  
A Division of Stewart-Warner Corporation

Circle No. 69 on Reader Service Card for more information

**22 MODELS**  
**COST-CUTTER**  
**CONVEYORS**  
Meet "FREAK" REQUIREMENTS  
without extra engineering cost

**3 of 22  
DESIGNS**

**TYPE 20**  
Four Wheel Mounted.  
Double Nose-Over.

**TYPE 22**  
Double  
Nose-Over  
and Adjustable  
Power Feeder.

**TYPE 19**  
Caster Mounted, Pow-  
er Feeder, Double  
Nose-Over, Adjust-  
able At Each End.

- Aluminum or Steel
- Electric or Gasoline
- Belt Widths 8" to 24"
- Lengths 4' to 40'

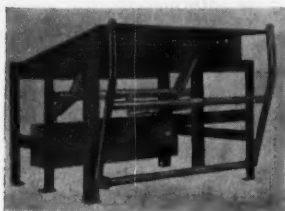
**IMPORTANT!** Every Cost-Cutter is Set Up and Test Run in our plant to assure Proper Performance. Send for BULLETIN 103

**NEW LONDON ENGINEERING CO.**  
TEL. 424 • DEPT. F • NEW LONDON, WIS.

Circle 105 on Reader Service Card  
**FLOW**



## Automatic Loading Ramp



The Christensen Division of Wm. Christensen Co., Inc., has developed a new automatic counterweighted loading ramp. The ramp, when ready for operation is in its highest position (as shown in photo). The truck backing in operates actuating arms and this energy is transmitted through a "shock absorber" type linkage to a linkage on the counterweight shaft. This relieves some of the weight from the counterweight and permits the deck to lower itself onto the truck bed automatically. The truck's springs deflections makes the deck rise and fall automatically. Vertical travel of 24 inches is offered on all standard model decks, which are 6 feet wide and available in 6, 8, or 10 foot lengths. Capacity is 20,000 pounds.

Circle 189 for more information

## Space Saving Motor



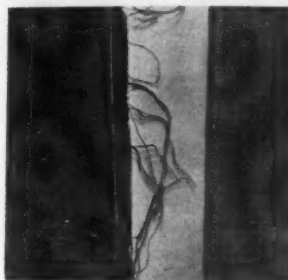
A new 1/20 to 1/3 H.P. "48-Frame" motor line has been introduced by Century Electric Co. The design offers remarkable weight

and space savings with no sacrifice of industrial ruggedness.

Feature of the lighter motor is high pressure-cast aluminum end brackets, precision machined and stress relieved for permanent dimensional accuracy. For cooling, the Century features an integrally cast, cluster type aluminum fan.

Circle 190 for more information

## Ravel-Proof Burlap Bags



A new overstitched side seam for burlap bags, which eliminates weft yarns on the cut edges of the burlap, has been introduced by Bemis Bro. Bag Co. The seam, called "Edge-Lock", is said to be the first basic improvement in burlap side seams in many years. The Edge-Lock burlap bag is expected to be especially a boon to company's having a return bag program, since the loose weft yarn problem tends to become progressively worse with each successive trip of the bag.

Circle 191 for more information

## Announces New Crane

Announcement of a new model crane, the S-1510, has been made by Coles Cranes, Inc. Designed to lift

**Why Jim Davis Picked RED GIANT HAND LIFT TRUCKS**

**BOY-THOSE RED GIANTS SURE HANDLE WELL!**

**I'LL SAY! AND THESE TIMKEN ROLLER BEARINGS ARE SEALED AND LUBRICATED FOR LIFE! AND THE HANDLE CAN'T KICK WHEN LIFTING OR LOWERING LOAD!**

**AND LOOK AT THIS RELEASE CHECK-IT'S A REAL SHOCK ABSORBER TO PROTECT EVEN THE MOST FRAGILE CARGO! I CHECKED THEM ALL, AND RED GIANT HAS THEM ALL BEATEN!**

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Circle 117 on Reader Service Card  
DECEMBER, 1956

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Chrome nickel alloys for high temperature  
Ashworth Metal Belts permit the combination  
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F 55



Circle No. 10 on Reader Service Card for more information

## NEW EQUIPMENT SECTION

15 tons at a 10 foot radius, the new crane has a 30 foot boom, and incorporates all the features of safety, flexibility and maneuverability of other models of Coles cranes. It is available in gasoline or diesel-electric powered models.

Circle 192 for more information

### Unveils New Truck Models

Hyster Company has introduced a new line of lift trucks, featuring pneumatic tires and a line of accessories for added versatility. The Hyster 20, model QC, has a capacity of 2000 pounds. Model 30 has a 3000 pound capacity, and is designed with dual trunnion steer wheels for extreme maneuverability and sharp turning radius. The Side-Shift, which permits side movement of load without moving the truck, is available, as well as Hyster's exclusive Monomast, a single upright assembly for increased visibility. Palletless handling may be had with the firm's Box Grab, and a Hold-Down Clamp firmly grips loads, allowing safe, fast handling without dan-



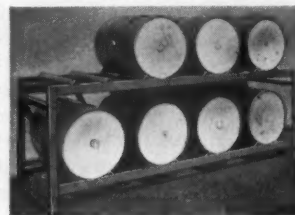
ger of spilling. Models 40 and 50 are also available. Circle 193 for more information

### Relieves Overcrowded Storage

A new space-saving drum rack, designed for providing efficient and economical storage space in plants, warehouses and shipping departments, has been introduced by Artco Corporation.

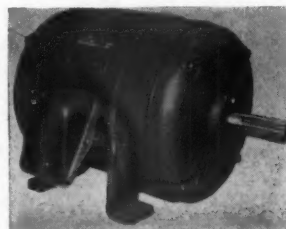
The Rak-A-Tier drum rack is 10 feet 2 inches long, 3 feet 4 inches high, and 3 feet deep, with a capacity of 8 drums. Welded steel construction provides direct access to each drum.

Circle 194 for more information



### Unique Motor Design

A line of "Linc-Weld" motors, which are claimed to represent a major advance in electric motor design through a unique extruded plastic insulation, have been developed by the Lincoln Electric Company. The motors are available in stand-



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MANHEIM, PENNSYLVANIA**



You'll find this new 68-page, 2-color Bond Catalog K-40 gives you the answers you need. It's not just for your files but for everyday use. There's a section on simplified caster selection that eliminates guesswork ordering. Other sections illustrate and give complete specifications for dependable Bond truck casters, hand trucks, dollies and all other Bond built-for-the-job handling equipment.

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Circle 17 on Reader Service Card for more information  
162

## HANDLING BULK MATERIALS?

**take it up a Flo-Tube,**

the spiral conveyor of dependable service. Used on incline or horizontally.

EXPOSED END IN BIN OR PILE

Mechanically handles materials from grain size to lump . . . sand, rice, seed, pellets, flakes, steel chips, wood waste, coal, etc.

STEEL TUBE OR CAST IRON TROUGH

## OR LIQUIDS?

**WAGENER PUMPS**

SIMPLEX

DUPLEX

**STEAM or POWER  
models for any need**

TYPICAL MATERIALS PUMPED:  
ACIDS, ALCOHOLS, BEER & POTATO MASH, DYES, GLUE, OIL (any kind), ASPHALT, BRINE, MILK, MOLASSES, SOAP, SEWAGE, WATER, TAR, GROUT

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Circle 26 on Reader Service Card for more information  
...FLOW

ard sizes from 1 to 40 horsepower. The present line is built in the open type frame and torque design B, and comply with NEMA specifications. Even though the motor is built in the open type frame, the company states that it may be used as a splash-proof motor.

Circle 195 for more information

### Step-On Industrial Loaders

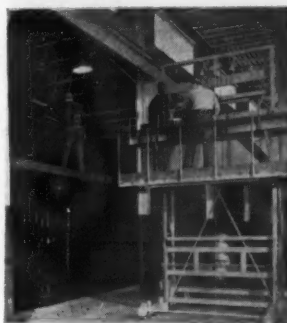


New step-on industrial loaders for Ford and Fordson Major Diesel tractors, featuring one-piece box frame construction and high lift with high dumping clearance, are being manufactured by the Tractor and Implement Div. of the Ford Motor Co. A major development of the new Ford loader line is operator convenience, according to the manufacturer. The frame design allows the operator to step on and off the tractor between the upright member and the rear wheel, instead of climbing over rear-attached implements. The new loaders are distinct implements, designed to work to best advantage on each type of tractor. They will fit any NAA, 600 or 800 series Ford tractor, while the loader for the Fordson Major Diesel will fit any

FMD tractor. Both are easily and quickly installed.

Circle 196 for more information

### Portable Bin Loading



A portable electric-powered bin-loading elevator has been developed by West Bend Equipment Corp. for use in steel warehouses, lumber sheds and similar operations which handle long, heavy material. Push button controls at the floor level and on the elevator platform operate an electric-motor-powered cable lifting mechanism. Safety controls prevent the platform from falling in case of power failure. The unit has a two-ton capacity and is built on a frame approximately 3 by 10 feet in size and 15 feet high.

Circle 197 for more information

### Produces Heavy Duty Corrugated

A unique triple-wall corrugated board, developed as a heavy duty packaging medium, is now being pro-



**MOVE YOUR GOODS**

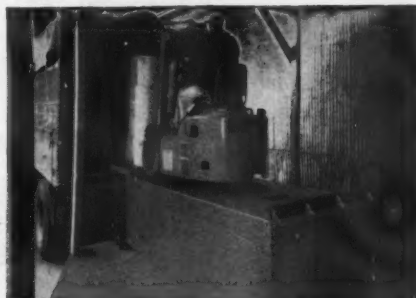
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**FOR FOOD** — For the dairy and chemical industries — For general material handling operations! Clean and sparkling inside and out, **PRE-FABRICATED ALUMINUM CONVEYORS** promote — facilitate — the maintenance of unusually high sanitary conditions. Easily cleaned — Sparkling — Smooth as silk — No-Slip Chain Pull — Variable Speeds — Reversible Drive Controls. Available in widths 6" to 96" Length 5'-175' or more. Get the full facts today. Write or call for Bulletin 300

**MERCURY INDUSTRIES, INC.**  
(CONVEYOR DIVISION—DEPT. C-11)  
HILLSDALE, NEW JERSEY

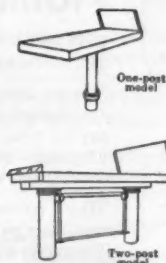
TEL: WESTWOOD 5-2636

Circle 96 on Reader Service Card  
**DECEMBER, 1956**



Get a **LIFT** from **FIELD...**

**LOAD-O-MATIC**



Effortlessly, smoothly, and quickly, the Field **LOAD-O-MATIC** automatically lifts loads up to 20,000 lbs. from loading dock to floor of truck, whether truck is above or below dock. The **LOAD-O-MATIC** drastically cuts loading time. Always working on the level eliminates spilling, prevents accidents. Two models available: two-post for loads 10,000-20,000 lbs.; one-post, under 10,000. **LOAD-O-MATIC** can be installed at ground level with rear safety barrier to prevent run-off... For details, write for bulletin.

**FIELD ENGINEERING PRODUCTS CO.**  
66 FOOTE AVENUE · JAMESTOWN, N. Y.

Circle No. 54 on Reader Service Card for more information



## NEW EQUIPMENT SECTION

duced by Tri-Wall Containers, Inc. Called Tri-Wall Pak, the new material has increased strength which extends its usefulness into packaging applications heretofore too demanding for corrugated.

Circle 198 for more information

### Improved Radio Cabinet

A two-way radio communication cabinet for housing transmitter, receiver and power supply chassis at a fixed location is reported by the General Electric Co. Called the "Desk Mate", the base station cabinet was designed as a piece of office furniture. It was designed to house a standard nineteen-inch long chassis operating in any mobile frequency range. For ease of servicing, both side panels can be removed for front-to-back access.



Circle 199 for more information

### Functional Designed Motors

Functional Design, without unnecessary size and weight, is the Keynote of a completely new line of Gearmotors and Motogears introduced by the Link-Belt Co. New design



concepts have been combined with latest manufacturing methods; this produces Gearmotors and Motogears of outstanding stamina, and provides maximum economy in heavy-duty service, with minimum maintenance, says the manufacturer. These two units are rated in accordance with AGMA standards. The Gearmotors range up to 30 H.P., and the Motogears up to 60 H.P. Output speeds range from 280 R.P.M. down to 6 R.P.M.

Circle 200 for more information

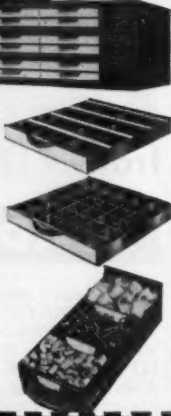
### Heat Treating Basket

The Wiretex Manufacturing Co. is producing a new stacking type heat treating basket that can carry a 2½ ton load into a pit furnace. Made of Inconel throughout, it is designed to withstand excessive temperatures of up to 2200 degrees F. Baskets measure 34½ inches



## MAKE EQUIPTO YOUR DRAWER HEADQUARTERS

Now there's an Equipto drawer to suit every type small part. Each has dividers to adjust the size and number of compartments... labelholders for quick identification of parts. Some of the drawers are shallow for tiny parts; others are deep for larger parts. All are interchangeable in multiple drawer units to permit you to custom design your storage to suit your needs. Clip and mail coupon for full facts.



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Please send me full details on Equipto Drawer Units

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164

## STOP GUESSING START SAVING!

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gives complete production  
data continuously... automatically

Now get complete, accurate,  
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any machine, process, operation.  
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Establishes true  
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Permits supervision  
of parts replacement,  
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Gives total operating  
time of machine,  
feed or belt-line.

Allows ability to  
anticipate equipment  
servicing.



Circle 67 on Reader Service Card for more information  
FLOW

(inside diameter) x 22 inches (outside diameter) deep. Sides are of plate Inconel and the screen is mesh. The lifting device is 1 inch diameter Inconel rod. The complete unit of three baskets weighs 1200 pounds. Load per basket is 1750 pounds.

Circle 201 for more information

### Pneumatic Clamshell Bucket

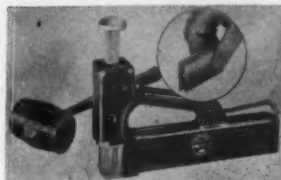


To speed shaft mucking and excavating, the Blaw-Knox Co. has introduced a new type clamshell bucket. The clamshell is a pneumatic closing type for use with single drum hoists. Both the  $\frac{3}{8}$  and  $\frac{5}{8}$  cu. yd. sizes are designed to accommodate either Ingersoll-Rand or the Gardner-Denver air hoist. According to the manufacturer, safety

has been a major factor in designing the bucket. All external edges are streamlined and the bucket is well balanced. The bucket operates on 85 to 100 pounds air pressure, the same as required for operation of other shaft drilling equipment.

Circle 202 for more information

### Plastic Nailing Machine

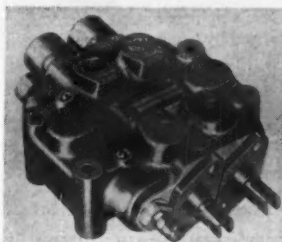


A plastic, heavy duty nailing machine, capable of driving  $1\frac{1}{2}$  inch 16 gauge staples into the hardest woods, has been introduced by Spotnails, Inc. The new Model B Spotnailer

is a lightweight, magazine-fed machine designed for the longer, heavier fastening operations in woodworking, such as bedding box frames, plywood panelling, pallets, crating, etc. The  $1\frac{1}{2}$  inch staple, the HD12, is rust resistant and cohered in sticks for easy loading. Staples are also available with rosin coating which further increases their holding power.

Circle 203 for more information

### Directional Control Valve



A new directional control valve for fluid power circuits, Hydrex Series V-32, has been introduced by Kalamazoo Div. of New York Air Brake Co. The new valve was designed especially for material handling

equipment and other mobile units. Employing an in-

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Circle No. 97 on Reader Service Card  
DECEMBER, 1956

## Overcoming Headroom Limitations with a LOW HEADROOM TROLLEY EUCLID CRANE



- Rapid growth of a progressive company necessitated the installation of a larger, more powerful crane.

Headroom limitations prevented the use of a conventional crane without expensive lowering of the runway which would have restricted the working height under the hook.

Euclid engineers solved the problem by incorporating standard units

into this compact yet accessible low headroom trolley.

Regardless of your needs for material handling equipment a standard or specially designed Euclid Crane or Hoist will meet the requirements satisfactorily.



*Write for  
Literature*

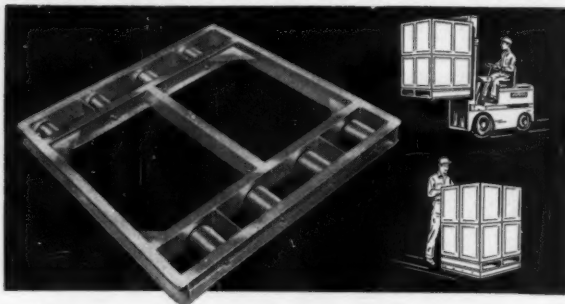
**THE EUCLID CRANE & HOIST CO.**

1362 CHARDON ROAD

CLEVELAND 17, OHIO

Circle No. 51 on Reader Service Card for more information

Circle 155 on Reader Service Card for more information



## New Magliner Magnesium PALLET DOLLIES keep loads mobile and stock movement fluid!

**SPEED DOCK LOADING** . . . expedite pallet handling—get more out of your manpower and truck-power! Use Magliner magnesium pallet dollies to move loads in or out of trucks and rail cars with cost-saving speed and efficiency. Use them in the plant or warehouse to move pallet loads quickly, easily, *economically!*

**LIGHT** . . . Made of magnesium, world's lightest structural metal, Magliner Pallet Dollies are easily carried by one man . . . get back to the loading point fast!

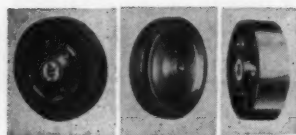
**STRONG** . . . Tough, rugged, welded magnesium channel construction. Dolly rolls easily on large  $3\frac{1}{2}$ " diameter, heavy-duty rollers. Fourteen standard models and sizes available. 2,000 and 4,000 lb. capacities. Built for dependable, long-life service. Write today for Bulletin P8-1



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...Make an ideal Low Cost  
**HANDLING SYSTEM**



**WHEELS**  
PLASTIC  
RUBBER  
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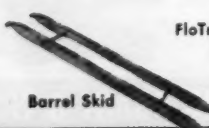


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30 Hoffman Place • Hillside, N. J.



RollTruk



Barrel Skid



FloTruk

Circle 74 on Reader Service Card for more information

166

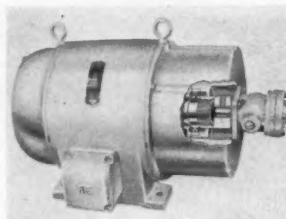
## NEW EQUIPMENT SECTION

tegral pilot-operated relief and unloading valve, the valve has a rated capacity of 20 gpm, at maximum recommended operating pressure of 200 psi. A parallel circuit affords simultaneous connection of the pressure port to any number of cylinders. Under static load the control lever provides direct control of cylinder pressure. Five models are available, offering from 2 to six operating plungers.

Circle 204 for more information

### Eliminates Alignment Problems

The Reuland Electric Co. has available a new spline coupling method of hooking up a hydraulic pump to an electric motor's output shaft which eliminates all adapter and alignment problems.



Features, in addition to installation savings, include streamlined appearance, compactness, spline coupling supplied with motor and a new set-up which accommodates all standard make pumps. The motors are available in ratings from 15 h.p. through 40 h.p. in frame sizes 324U and 326U.

Circle 205 for more information

### Vibratory Power Unit

A new vibratory power unit has been developed for use with small parts feeders manufactured by Perry Equipment and Engineering Co. The unit is designed on a new



three spring suspended principle with the springs nearly vertical to accomplish a gentle flow of parts and to increase production. It is stated that this principle also permits perfect balance and lends itself to the round design which allows the unit to fit anywhere.

Circle 206 for more information

### Desk-Top Base Station

Featuring finger-tip control without using control lines, a new desk-top model base station has been added to the line of two-way mobile radio communications of Allen B. Du Mont Laboratories, Inc. Known as "model MCA-155-B, desk-top console base station", it is a complete



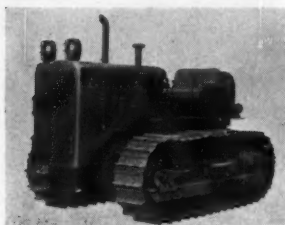
FLOW



base station and is designed to meet requirements of dispatchers, foremen and others. Specifications are: 8½ in. high, 23½ in. wide, 18 in. deep, and weight of approximately 50 pounds. The frequency range of the unit is a 25-54mc, 40 watts minimum output.

Circle 207 for more information

### Crawler-Tractor Has Increased Power

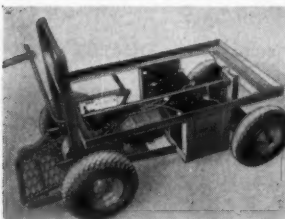


Among the major features of International Harvester's new TD-18 (182 Series) crawler tractor is a 6-cylinder diesel engine giving 103 drawbar hp. Final drives are designed for heavy duty, and positive sealing

keeps out dirt while retaining lubricant, according to the manufacturer. The TD-18 has an engine clutch driven member made of ceramic material and fused powdered metal. Other features are a re-designed operator compartment with increased visibility, and a one-piece isolated radiator protected by a hinged guard. Power steering is standard equipment.

Circle 208 for more information

### "Hands Free" Steering

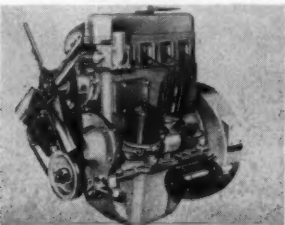


Taylor Manufacturing Company has introduced an electric truck which utilizes an adjustable straddle bar tiller for steering from a standing position, when "hands free" operation is desired.

Called the Taylortruck, the unit also features self locking brakes, six forward and six reverse speeds, and a maximum forward speed of 12 mph. Overall size is 36 inches wide by 73 inches long, with loading platform 36 inches wide by 54 inches long, and maximum turning radius is 69 inches. The Taylortruck is available in 3-wheel or 4-wheel models.

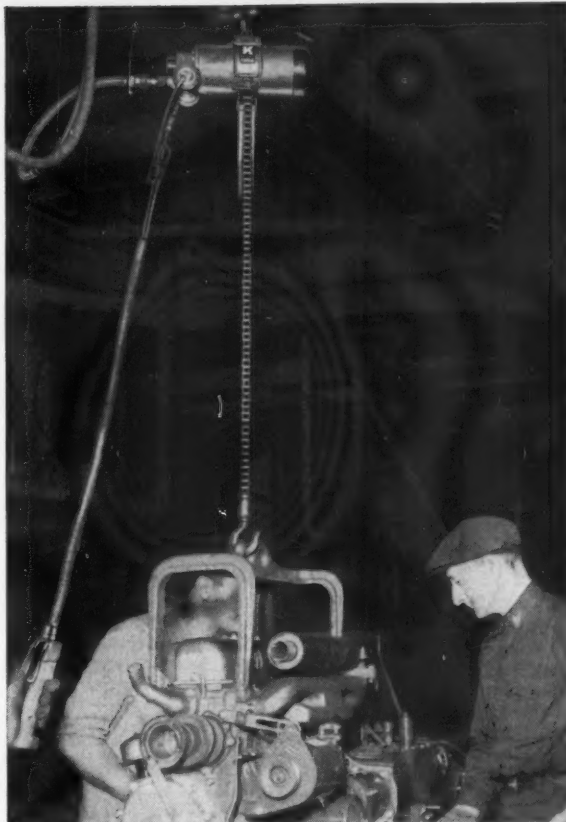
Circle 209 for more information

### Interchangeable Gas and Diesel Engines



Interchangeability has been stressed throughout the new line of Hercules gasoline and diesel engines. The gasoline engines are interchangeable in regard to mounting dimensions

with the new diesel engines of the same number of cylinders, and also many common parts and components over the entire twelve models are interchangeable. The new engines are designated G. O. Series (Gasoline Overhead Valve) and D.D. Series (Direct Injection).



Buckle-up of engine, transmission and rear axle with 1000-lb. hoist.

## ACCURATE CONTROL

*from swift lift to slow set*

Keller Tool Air Hoists know when to get going or take it easy. The sensitive, hand control valve gives you smooth-as-silk operation.

CHOOSE YOUR MODEL. THEY'RE ALL KELLER TOOL QUALITY.

- **CANNOT BURN OUT** from overloading or stalling.
- **LIGHT WEIGHT**—easy to move and hang.
- **LOW MAINTENANCE**—rugged air motor not affected by dust and fumes.
- **CONTROLLED SPEED**—from a creep to maximum aids load spotting.

Model	Capacity	Speed	Weight
86-2V20	2000 lb.	19 f.p.m.	78 lb.
86-2V20L*	2000 lb.	19 f.p.m.	78 lb.
86-2V10	1000 lb.	35 f.p.m.	78 lb.
86-1V10	1000 lb.	19 f.p.m.	28 lb.
86-1V10L*	1000 lb.	19 f.p.m.	28 lb.
86-1V5A	500 lb.	35 f.p.m.	28 lb.
86-1V3	300 lb.	80 f.p.m.	28 lb.

\* Models with link chains

Ask for Bulletin 86

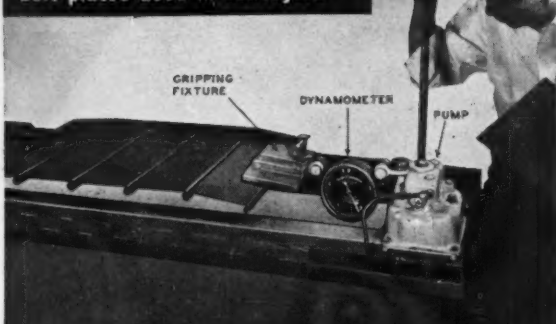
## GARDNER - DENVER

KELLER TOOL division, Grand Haven, Michigan

THE QUALITY LEADER IN COMPRESSORS, PUMPS, ROCK DRILLS AND AIR TOOLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Circle 58 on Reader Service Card for more information

### DILLON Dynamometer checking strength of joints between steel belt plates used in conveyors



**Precision Bull**

Compact, 5" dial model measures only 8 1/4" x 6 1/4" x 3". Weighs 8 lbs. Fits into "tight" spots.

*Accurate Dependable*

### MAKE SURE WITH A DILLON DYNAMOMETER

In actual field tests or in the lab., DILLON Dynamometers provide accurate test results. Measure static or moving loads instantly in conjunction with hoists, turnbuckles, air pistons, etc. 13 capacities from 0-500 lbs. up to 0-100,000 pounds. With max. pointer. WRITE FOR ILLUSTRATED LITERATURE AND FREE TENSILE STRENGTH COMPUTER.

**W. C. DILLON & CO., INC.**

14624Q Keswick St., Van Nuys 8, Calif.  
(suburb of Los Angeles)

## HERE'S HELP

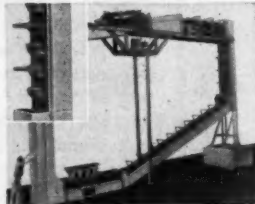
THAT SOLVES TROUBLESOME BULK HANDLING PROBLEMS:

# Hapman

### Tubular and Pivoted Bucket Conveyors



Hapman Tubular Conveyors move almost any bulk material—wet or dry—through any plane or angle. They're dust, liquid and odor-tight. Investigate! WRITE For Bulletin P-F126.



Exclusive top loading device on Pivoted Bucket Carrier handles fragile materials gently. Many other unique advantages. WRITE for Bulletin P-F126.

**Hapman CONVEYORS, INC.**  
DIVISION HAPMAN-DUTTON COMPANY

KALAMAZOO MICHIGAN

In British Commonwealth & Europe: Fisher and Ludlow Ltd., Birmingham

Circle 158 on Reader Service Card for more information

## NEW EQUIPMENT SECTION

tion Diesel). Also, cylinder blocks are interchangeable between the gasoline and diesel engines of like size, and are so designed that the blocks may be turned end-for-end and the flywheel housing and gear cover bolted to either end.

Circle 210 for more information

### Cuts Maintenance Costs

A new, portable all-hydraulic, elevating work platform which converts any size or type of truck for aerial work up to 37 feet, has just been put on the market by the G. W. Galloway Co. Called

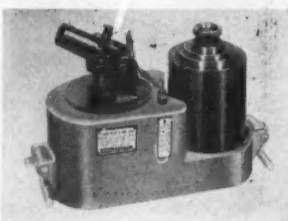


the Hy-Deck, it can raise a 500 pound weight to full height in less than 2 minutes, and will be great time saver in the maintenance of outdoor lighting, power, and communications lines, outdoor signs, advertising and decorating services, tree trimming and other overhead maintenance activities. Available with electric motor, gasoline engine, or power take-off, the work platform can be raised and lowered by means of foot controls right on the platform floor.

Circle 211 for more information

### 17 Ton Hydraulic Jack

The development of a powerful 17 ton hydraulic jack has been announced by Los Angeles Automotive Works. This new type of power jack for lifting and pushing large masses is so small that

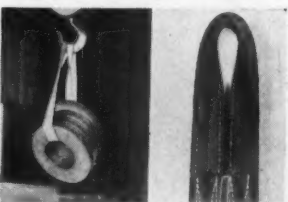


it can be carried in the trunk of a car, or mounted on a wheel plate. From a base of 9 inches, the telescopic cylinder raises to a height of 29 inches. An adjustable relief valve prevents overloading.

Circle 212 for more information

### Nylon Webbing Sling

Scratch-free handling of highly finished or soft materials is made possible through the use of the new Liftex nylon webbing sling designed by The Caldwell Company,

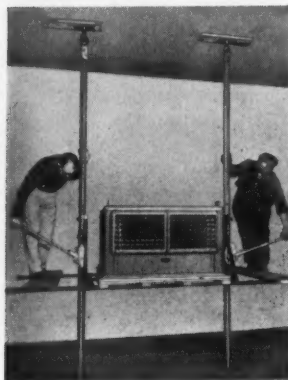


Inc. The slings are chemically treated to resist grease, abrasives and chemicals, and no rivets or metal fasteners are used in their construction. Various models

ranging in capacities up to 13,500 pounds are available, including eye-and-eye, endless, reversed eye and heavy duty double thick models. All have a 5 to 1 safety factor.

Circle 213 for more information

### Lightweight Two-Man Hoist

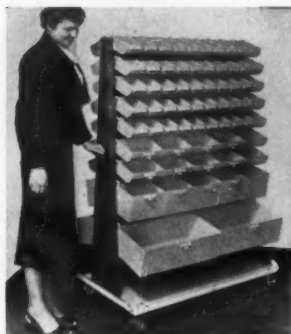


Capable of lifting 4000 pounds as high as 18 feet is a new lightweight two-man hoist manufactured by Hastings Air Control, Inc. Called the "Hoist-It", the unit is designed for erecting suspended or platform mounted equipment, and is particularly useful in the installation of suspended air conditioners, air-handling units, elevated window

air conditioners, etc. It is stated that contractors can cut the cost of suspending heavy equipment as much as 60 percent with this lift. The unit is collapsible and can be quickly assembled and easily carried from job to job.

Circle 214 for more information

### Small Parts Handling

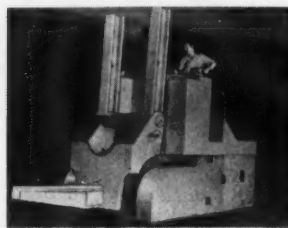


A new system of storage, handling and display of small parts has been introduced by Service Parts Systems, Inc. Called Double Jumbo-Combo, the unit consists of various sized shelves and bin type removable containers, mounted on a portable or stationary frame. The portable unit is 62

inches high, with 4 inch diameter wheels. The stationary model is 56 inches high and is ideal as an island unit.

Circle 215 for more information

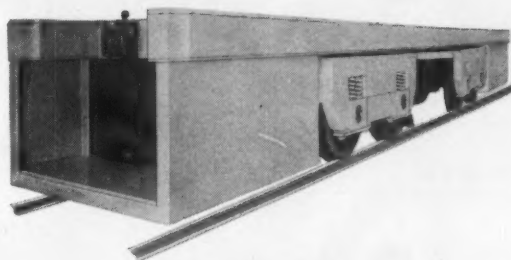
### Electric Ram Trucks



A new line of electric powered heavy duty ram trucks, with capacities from 10 to 40 tons, has been announced by the Elwell-Parker Electric Co. Compact construction gives the trucks a narrow

overall width, and they also feature caster type

# Built to take a beating!



## Phillips motorized transfer cars

Even under the most adverse conditions, Phillips Motorized Transfer Cars will provide extra long service life because extreme durability has become a design feature as with all Phillips equipment. Each unit is custom engineered to fit individual requirements. Motive power may be battery, gas electric or external electric. Capacities—15 tons up. Write, wire or phone Phillips for full details and prices.

## *SALEM-BROSIOUS, INC.*

13 Arch Street • Carnegie, Pa.

PHILLIPS MATERIALS-HANDLING EQUIPMENT

Manufacturers Since 1863

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Circle 134 on Reader Service Card for more information

## SECTIONAL BINS

**BUILT  
TO LAST  
A LIFETIME**

For converting skid platforms into skid-bins for handling loose loads. Capacities increased by adding rings. Outside corner angles, radiused for safety, are full height of bin for protection of hardwood sides. Our own lock corner construction reinforces bolts and insures longer life.

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SKID PLATFORMS



ROLLAWAY SKIDS



SKID-BOXES



**LANHAM**  
**SKID CO.**

DIVISION OF THOMAS TRUCK & CASTER CO.  
614 On the Mississippi River, Keokuk, Iowa



## ALUMINUM DOCK BOARDS and YARD RAMPS

- Standard sizes and custom fabricated
- Constructed of strong, lightweight aluminum alloy



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**New York Office—Mu. 7-0926**

Circle 147 on Reader Service Card for more information  
170

## NEW EQUIPMENT SECTION

trailing axle, steel mill type electric controls, redesigned lifting mechanism and hydraulic power steering and wheel brakes. The construction is designed so that sub-assemblies are attached directly to the frame. Propeller type construction of the power plant permits removal of the motor without disturbing the reduction gear, and visa versa.

Circle 216 for more information

### One Man Drum Operation

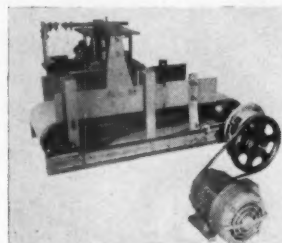
A drum tilter that makes it easy for one man to empty a standard 55-gallon drum has been developed by Heppenstall Company. Capacity is 750 pounds, and tilting is accomplished by a pull chain or a handwheel. It is suitable for both disposable and returnable type 55-gallon drums. The drum can be rotated through a full 360 degrees by a worm drive arrangement. Two locking devices are provided for safety in operation.



Circle 217 for more information

### Unitized Weighing Belt Conveyor Scale

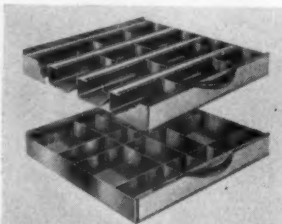
A new "packaged" unit weighing belt conveyor scale, having internal belt conveyor and drive assembly, has been announced by Weighing and Control Components, Inc. The unit features one part in 2000 repeatability and one part in 5000 sensitivity, and is unaffected by side thrust forces. Springs, knife edges and beams are eliminated. Control functions include indicating, recording, controlling, integrating, proportioning and programming.



Circle 218 for more information

### Choice of Drawers

Little Gem cabinets for small parts storage are now available with two different drawers, according to the manufacturer, Equipto Co. Type A drawer offers up to 28 adjustable compartments with curved surfaces, enclosed bottom and sides, and

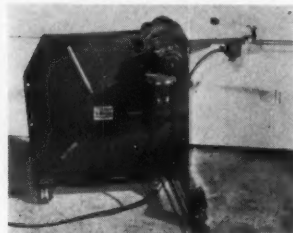


FLOW

drawer stop to prevent accidental spilling. Lower priced Type B drawer has up to 36 compartments, and has conventional flat surfaces.

Circle 219 for more information

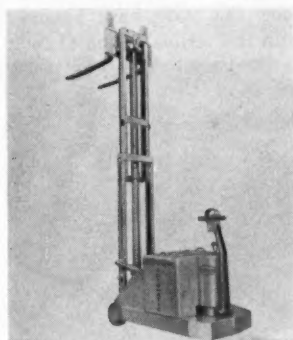
### Cuts Steel Strapping



An electric power dispenser for cutting steel strapping to specified lengths is the latest addition to the line of steel strapping, tools and equipment manufactured by Allegheny Steel Band Co. Known as Model E-5600, this new accessory dispenses strapping at approximately 250 feet per minute, and can handle heavy duty strapping. Powered by an electric motor with electric brake, the unit can be mounted on casters or installed permanently.

Circle 220 for more information

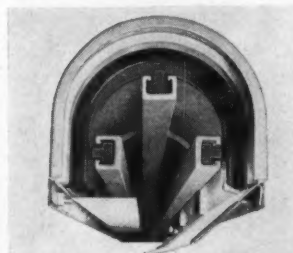
### Re-Designed Truck Series



The introduction of a completely re-designed series of Transporter Operator-led electric trucks has been announced by Automatic Transportation Co. The new series includes pallet trucks, low lift platform trucks and high lift suspended load type stackers. Tractors and high lift platform trucks will be available shortly. The Transporters measure only 21½ inches plus load, including an 8¼ inch battery compartment. A new feature called Pallet-Chek eliminates the necessity of chamfering end boards in double-faced pallets. Three-speed butterfly control allows smooth precise inching forward or back. Ease of maintenance is also stressed in the new design.

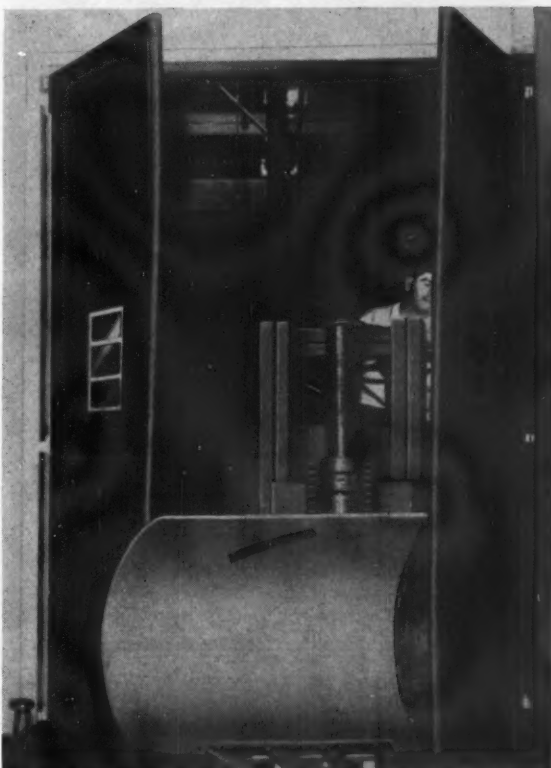
Circle 221 for more information

### High Voltage Trolley Bus Way



A new enclosed trolley bus way system manufactured by Electric Service Manufacturing Co. is designed to supply power up to 300 amperes at voltages up to 575 AC or 250 DC. The new system, called Lec-Trol-Feed, employs three insulated aluminum bus bars, arranged in a delta pattern and completely enclosed in

## LONGER LIFE at LOWER COST ... with RUBBAIR® DOOR



Photograph shows effective Rubbair® Door installation at Tileston & Hollingsworth Company

Tileston and Hollingsworth Company, one of New England's oldest and most famous papermakers, wrote us a letter, saying in part—

*"The doors were installed in our Machine Room, where traffic moves twenty-four hours a day, six days a week. Trucks are continually smashing into the doors, as rolls are moved from the paper machines into the finishing area. The doors have given almost trouble-free operation since installation. The Rubbair Door operates faster than any other we have used."*

RUBBAIR DOORS speed handling, reduce repairs, protect loads wherever doors must be hung in an industrial operation. Built to meet users specifications.

Check these positive advantages:

- ✓ Speeds Handling
- ✓ Improves Insulation
- ✓ Cuts Repair Costs
- ✓ Reduces Noise, Fatigue
- ✓ Saves Stock damage, loads
- ✓ Prevents Injuries
- ✓ Maintains Temperatures
- ✓ Protects Equipment

FOR MAXIMUM TRAFFIC—  
MINIMUM MAINTENANCE

## install RUBBAIR DOORS!

For complete information write:

**Stic-Klip® MANUFACTURING CO., INC.**  
RUBBAIR DOOR DIVISION  
68 Regent St., Cambridge 40, Mass.

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# dependable



## ANCHOR HOIST TROLLEYS

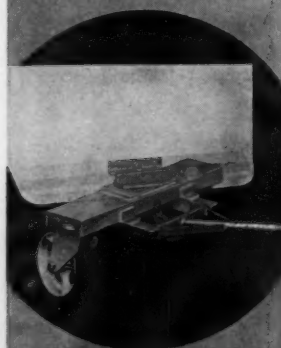
ANCHOR four-wheel hoist trolleys are designed for easy handling on straight or curved monorail systems. High grade ball bearing trolley wheels and hardened guide rollers permit maximum loads to be easily pushed by hand. These trolleys are commonly used with hoists, tool balancers, or welding transformers, or for bridge crane end trucks. ANCHOR can also furnish straight and curved rail, track switches, and completely installed monorail systems. Write for Bulletin 56-1.

## ANCHOR STEEL & CONVEYOR CO.

6906 KINGSLEY AVE. • DEARBORN, MICHIGAN



with  
**BRONCO-FORBES**  
"multi-action"  
WHEEL MOUNTING



write today for literature.

BRONCO PRODUCTS CO. 717 Stanford Ave., Los Angeles 21, Calif.

Circle 20 on Reader Service Card for more information  
172

you get BOTH

1 YOU GET the versatility, the handling ease of free turning caster type steering.

2 YOU GET the speed, the extra control, the longer wheel life of axle control steering.

Yes, the new Bronco-Forbes "Multi-Action" Wheel Mounting will give you "double duty" performance from your material handling trucks. Simply raise the towing arm to the upright position and the wheels are individually free for caster steering. Lower the arm to towing position and the wheels are locked in forward position and steer with the axle. Bronco-Forbes Wheel Mounting will let your equipment move faster, lower your replacement wheel cost and give you more varied service from each piece of equipment.

**BRONCO INDUSTRIAL WHEELS** ... are available in either disc or spoke type in a wide range of sizes and with bearings and molded-on rubber tires to meet the need of every application.

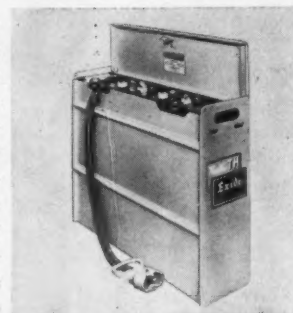
## NEW EQUIPMENT SECTION

an aluminized steel housing. Bottom safety covers prevent accidental contact with current carrying members. Track sections are 30 feet long. A complete line of accessories is available.

Circle 222 for more information

## Truck Battery Trays

New all steel battery trays, conforming to standards recommended by the Industrial Truck Association, have been introduced by Exide Industrial Div. of The Electric Storage Battery Co. Classified according to ITA groups one through nine, the trays

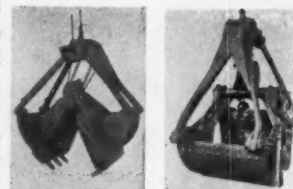


are available for 64 of the firm's batteries. Free of projections and indentations, the trays have hinged covers which open flush with the vertical plane of the back. The design provides for generous battery ventilation and clean truck operation.

Circle 223 for more information

## Clamshell Buckets

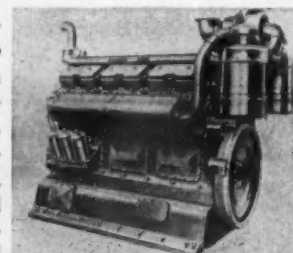
Two new groups have been added to the Erie line of clamshell buckets, it has been revealed by Erie Strayer Co. They are the  $\frac{3}{8}$  to 4 yard light rehandler and the  $\frac{3}{8}$  to 2 yard extra heavy-duty hard digger. Through the use of equalizer bar arrangement the complete line can be adapted to 3 or 4-line application. This brings to six the number of 2-line models offered by the firm.



Circle 224 for more information

## Power Plants

Two new heavy duty V-type engines, capable of producing up to 650 hp, have been announced by Caterpillar Tractor Co. Available in turbocharged, roots-blown, naturally aspirated and spark ignited versions, the new 8 and 12 cylinder D375 (Series D) and D 397 (Series D) engines are of four-cycle design, as were their predecessors.



FLOW



sors. Principal differences between the new engines and the former models are in the cylinder heads, exhaust manifolds, methods of supercharging, and in the spark-ignited engines, the fuel used and the method of igniting it.

Circle 225 for more information

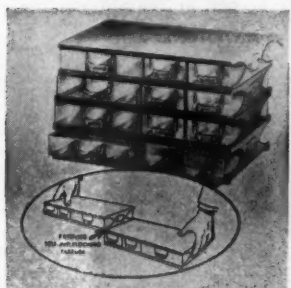
### Steel Frame Stacking Rack



A new portable open-side stacking rack has been introduced by Republic Steel Corporation, Pressed Steel Div. The racks are designed for handling and storage of package materials, products or parts which cannot be stacked without support. They are portable, and can be stacked to any desired height whether loaded or empty. Sizes are according to individual specifications.

Circle 226 for more information

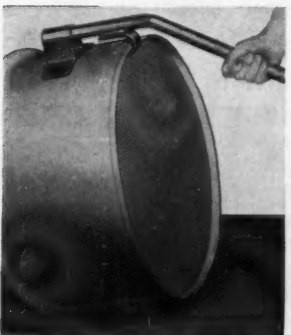
### See-Through Drawers



Small-items-storage and inventory control systems are made easier with Stak-Up See-Thru Drawer Cabinets, says the manufacturer, Jayem Sales Corp. The cabinets are made of clear, heavy-gauge plastic drawers which keep contents dust-free, easily accessible and in full view at all times. An interlocking feature of the unit permits stacking each cabinet quickly and safely to any practical height without the use of tools or additional hardware.

Circle 227 for more information

### Efficiency in Raising Drums



The Morse Mfg. Co. states that less muscle is needed to upend loaded oil or chemical drums with its newly developed Morse Drum Upender #32. The unit has a 40 in. handle, and a 35 degree offset for maximum efficiency in raising drums from horizontal to vertical. A 1 1/4 in. hook provides adequate clearance for the largest chime, and a 2 1/2 x 8 in. toe plate spreads lifting pressure over a large area

## VACUUM— "the Answer" TO MANY MATERIALS HANDLING PROBLEMS

### "VAC-U-PADS"

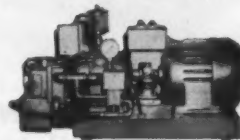
Speed up handling on hard-to-pick-up items. Fast attachment and detachment. Available in many sizes — round or rectangular — 25 to 2200 lbs. capacity.



### "VAC-U-LIFT" "POWERPAC"

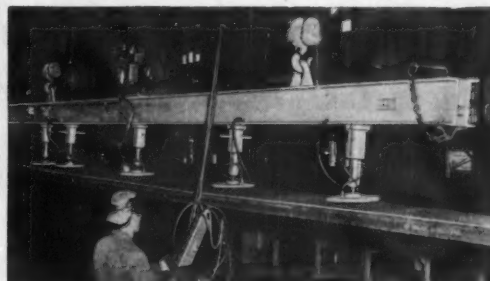
Completely packaged Vacuum System — exceptionally compact, adequate and dependable.

Many in use for experimental, pilot plant or production applications. Reserve system takes over in case of power or pump failure. Normal positive holding 3 hours or more. Eight models.



### "VAC-U-LIFT" MATERIALS HANDLING SYSTEMS

"A gentle touch handles a big load"



Uses principal of induced vacuum in conjunction with single or combination of a number of "VAC-U-PADS". Efficient sealing — complete safety. Reserve system maintains grip in event of power failure. Quick attachment and detachment. Push-button control — one man operation. Ideal for handling odd shaped, flexible, bulky and heavy materials. Present installations now handling up to 16,000 lb. loads.

SEND US YOUR PROBLEM FOR  
ENGINEERING SOLUTION

## VAC-U-LIFT Company

A division of Hufford Machine Works, Inc.  
SALEM, ILLINOIS

Exclusive Manufacturers of Vacuum Handling Equipment

Circle 160 on Reader Service Card for more information

Circle 127 on Reader Service Card for more information

# WIRE TAINER

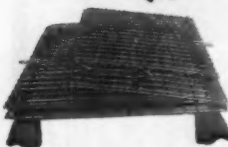
TRADE-MARK REGISTERED

## SAVE SPACE

Folding • Stacking • Open Base



1 & 2  
TON  
Capacity



### WIRE TAINERS

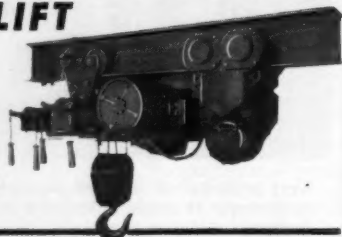
fold down to 1/5 actual size . . . save storage—shipping. High strength, collapsible, welded wire construction with stacking type feet.

WRITE FOR DETAILS

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SPRINGPORT, MICHIGAN—PHONE 78

## for top performance and dependability ELECTROLIFT

### WORM DRIVE HOISTS



To give you the fastest, smoothest, most efficient materials handling operation, ElectroLift designed the Worm Drive Hoist. Only Worm Drive gives you these four big advantages:

- Simplified design—longer life with fewer moving parts.
- Greater safety factor because of increased braking ability of worm drive.
- Noise-free operation.
- Greater compactness—close headroom.

Available in a wide selection of models, speeds, capacities and controls. For complete information, contact your ElectroLift representative listed in telephone directory.

**ELECTROLIFT**

3791

**ELECTROLIFT, INC., 204 Sargeant Avenue, Clifton, N. J.**

Circle 47 on Reader Service Card for more information

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## NEW EQUIPMENT SECTION

to prevent drum damage. The unit is said to speed production and to make drum handling a fast, one man operation.

Circle 228 for more information

### Flexible Box Car Loader

The E. C. Horne Machinery Co. is now marketing a new model box car unloader of Shields flexible conveying equipment. The unit features power

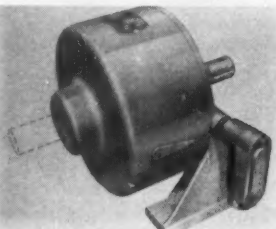


tramping, power discharge height adjustment, and utilizes the patented Shields flexible conveying principle to convey around curves of varying radii. Because of the flexibility of the discharge end, material can be delivered according to the progress of loading; no interruptions in the loading cycle are required for positioning the loader. It is stated that with two men in the car to control the loader and pile the bags or cartons, a regular loading rate of forty minutes per car can be maintained.

Circle 229 for more information

### New Type Magnetic Brake

A disc type brake that can be mounted separately from a motor is introduced by Reuland Electric Co. The unit provides the advantages of disc type braking to equipment manufacturers who cannot use a direct

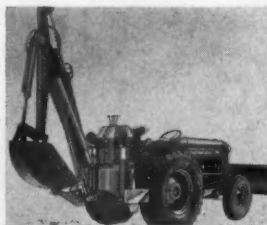


endbell mounted unit. These foot-mounted brakes are available either with self-contained bearings and shaft or without shaft. Ratings available are 3 to 25 foot pounds for continuous duty, and 3 to 35 foot pounds for intermittent duty.

Circle 230 for more information

### Back Hoe-Backfill Blade

The Wain-Roy Corp. of Hubbardston, Mass., now manufactures a combination back-hoe and backfill blade attachment for the International 300 Tractor. It is engineered to handle a number of different trenching jobs, bell hole



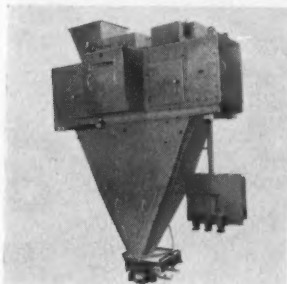
and foundation excavation, plus backfilling, leveling, grading, etc. The hoe is a complete, self-contained unit and can be removed or attached in less than 30 min-

FLOW

utes. Only four pins and two hoses need be attached before it is ready for operation. Effective digging depth is 11 ft. and, because it is able to dig and dump in a 190 degree radius, the hoe may be worked in extremely cramped quarters, reducing interference from passing traffic.

Circle 231 for more information

### Weighs and Bags Sacks



A high-speed automatic bagging scale that accurately proportions and bags 10 or more sacks of dry aggregate ingredients per minute has been announced by Richardson Scale Co. Called the Richardson "Weighblender", the

unit consists of a series of three scales mounted on a sturdy base frame, with the bagging hopper beneath arranged to receive ingredients simultaneously from all three scales. The system will accommodate bags ranging in capacity from 25 to 100 pounds.

Circle 232 for more information

### Electric Tailgate Loader

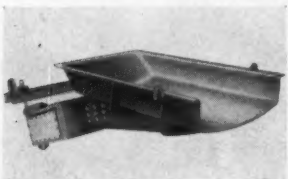


The Ven Corp. has introduced a new electric tailgate loader, for  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1-ton pickup trucks, that raises 600 pounds in 15 seconds at the touch of a switch. The manufacturer states that this makes it one of the

fastest, smoothest operating automatic lifts on the market. Using this unit, loading and unloading of heavy merchandise can be done with one man. Designated Model 300 Electric Tailgate Loader, it weighs 215 pounds and has a platform size of 28 in. x 4 ft. The switch is rain tight and the heavy bronze worm gear and steel worm have been tested for 10,000 cycles under full load to insure lasting performance. The electric motor is reversible with a built in motor brake to prevent coasting and insure safe operation.

Circle 233 for more information

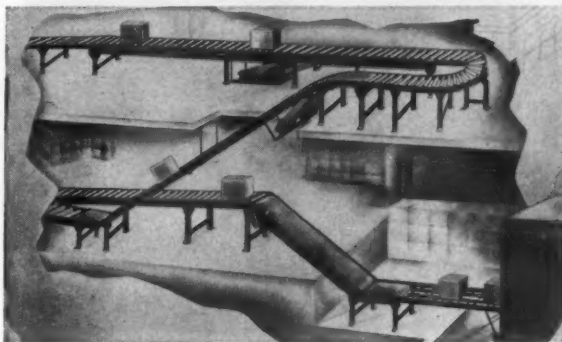
### Protection for Vibratory Feeder



A new optional dust-tight design feature has been incorporated in the F-55DT Vibratory Feeder manufactured by Syntron Co. This feature encloses the magnet and leaf

springs of the unit, thereby preventing any dust in the air or spillage from a supply hopper to impair the

## THE NEW LAMSON ERECTO conveyor units



This illustration shows one of the thousands of possible combinations using Lamson Pre-Engineered Conveyor Units.

## SAVE YOU ENGINEERING COSTS INSTALLATION COSTS

For Every Type of Layout Lamson offers 4 types of Pre-Engineered Conveyor Units: Roller Gravity, Wheel Gravity, Belt and Live Roll Conveyors.

### Designed By You... Installed By You!

You can combine Lamson Erecto Conveyor Units into whatever type of system your materials handling requires. Your Lamson Dealer will help you plan a Lamson Erecto Conveyor system tailored to your plant layout. Your regular personnel can install Lamson Erecto Conveyor Units with ordinary tools.

### As Flexible As Your Future!

You can quickly adapt to new conditions in material handling by relocating the units... by expanding or shortening the system. The flexibility of Lamson Erecto Conveyor Units allows you to plan your present system with an eye toward future expansion. All parts are standardized for easy addition or replacement.

### Ruggedly Constructed!

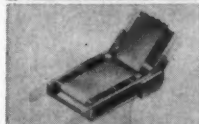
Lamson Erecto Conveyor Units are built of precision-balanced rolls, formed steel channel supports and tough, sturdy frames. Lamson Erecto Conveyor Units are designed for long-lasting life. They provide fast, efficient flow of materials at greatly reduced costs.

### Speedy Delivery!

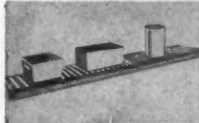
Your Lamson Erecto Conveyor Units arrive on the job shortly after your order has been placed.



Center Drive



Chain Driven Tail Belt



Roller Gravity Conveyor

Write today for your free booklet which shows how you can save engineering and installation costs and time... with Lamson Erecto Conveyor Units. MAIL THIS COUPON TODAY!



Lamson Corporation  
2452 1/2 Lamson Street, Syracuse, New York

Gentlemen: Please send me a free copy of your booklet describing Lamson Erecto Conveyor Units.

NAME.....TITLE.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

Circle 80 on Reader Service Card for more information



Circle 77 on Reader Service Card for more information

# JAKES

**America's Finest  
Industrial Trucks and Trailers**



MODEL 1560 RFW

**Capacity 6,000 lbs.  
Reversible four-wheel steering**

WRITE FOR LITERATURE

**JAKES FOUNDRY COMPANY**

Established 1891

2800 Charlotte Avenue

Nashville 9, Tennessee

**NEW!**  
NARROW BELT  
**UNITIZED**  
CONVEYOR

**BELT WIDTHS  
OF 1" TO 6"**



**For Handling Small  
Dimension  
Light Weight Containers**

Easy to install, economical to operate, this new Unitized Conveyor is available in any length of 5' increments, i.e. 5', 10', 15', 20', etc.

## CONSTRUCTED of STANDARD PARTS

making it easy to lengthen the conveyor if increased production makes this necessary. Obsolescence of equipment is eliminated. Ideally suited for the pharmaceutical, cosmetic, aerosol packaging, drug and chemical, plastics, food products and baking industries.

**FREE!**

MAIL THIS COUPON FOR FULL DETAILS

**ISLAND EQUIPMENT CORP.**  
27-01 Bridge Plaza North  
Long Island City 1, N. Y.

F 12

Please send particulars on the Unitized Narrow Belt Conveyors.

COMPANY.....

BY.....

ADDRESS.....

CITY.....STATE.....

Circle 75 on Reader Service Card for more information  
176

## NEW EQUIPMENT SECTION

smooth feeding action of the electromagnetic motor drive. Leaf spring ends are covered on each side of the base casting and a metal plate covers the armature and core. All plates are bolted to the magnet casting against sealing gaskets.

Circle 234 for more information

## Suspended Separation Magnet

Stearns Magnet, Inc. has announced a new line of suspended separation magnets for use with conveyor systems. Suspended over the head pulley or anywhere along the belt, the magnet's pulling force digs out imbedded tramp iron in the flow of material, preventing "sneak throughs" that could contaminate the product or ruin processing machinery. The units are available in a variety of standard sizes, or may be built to customers' specifications.

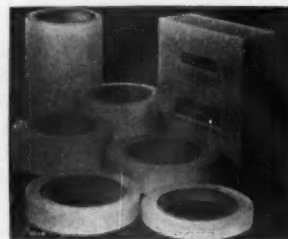
Circle 235 for more information



## Pressure Sensitive Tape

A new .013 pressure-sensitive Teflon tape called Temp-R-Tape TH, is being manufactured by The Connecticut Hard Rubber Co. The tape was developed as a heavy duty non-stick facing, and is recommended for use on gussets, fins, forming dies and heat sealing bars on packaging machines as well as on labeling machines, folding machines, printing presses and on food and beverage processing machinery. According to the manufacturer, it has a useful temperature range of 100 to 400 degrees F., adheres well to metals, plastics, ceramics and most other materials.

Circle 236 for more information



## Dual Purpose Marking Machine

A marking machine capable of marking steel, stainless steel, cast iron and other metal products is now adaptable for marking plastic parts, products and materials with no change-over except slight adjustments. It is capable of marking thermoplastics and in many instances, thermosetting plastics as well. The machine,



FLOW

manufactured by The Acromark Co., is designed as the 1956 Model 9AH, and is driven by an air cylinder provided with a foot or hand valve. An electric heating element plugs into any 110-220 volt socket.

Circle 237 for more information

### Increases Usable Floor Space

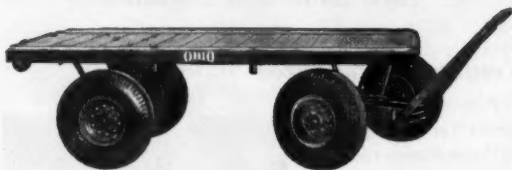


The Mobile Storage System, manufactured by the Mobile Storage Div. of Dolin Metal Products Inc., increases the amount of usable floor space by converting a large percentage of storage area aisle space into useful productive area, says the manufacturer. In the static storage arrangement (files, shelves, cabinets, bins, etc.) commonly used, there is one aisle for every two rows of storage equipment, roughly 50 percent of the area being non-productive. The system makes possible 6, 7, 8 and more rows of equipment with only one aisle. Virtually all types of existing storage equipment are easily converted to mobile storage.

Circle 238 for more information

## OHIO

### Industrial Trucks & Trailers



One Piece Tee Section Steel Frame Trailers

**No. 3003 size 36" wide x 96" long x 27" high with capacity of 6000 pounds—Fifth Wheel Construction with Pneumatic Tires and Wheels with Timken Bearings. Hardwood Deck and Safety Rear connection. This trailer made in one ton to five ton capacity.**

*Various Platform Sizes may be furnished.*

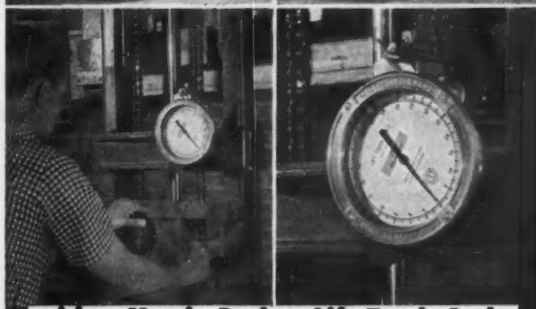
Heavy Duty Truck and Trailers to YOUR Specifications. Write for Detailed Information.

**THE OHIO GALVANIZING & MFG. CO.**  
NILES      Established 1902      OHIO

Circle 107 on Reader Service Card for more information  
**DECEMBER, 1956**

Circle 94 on Reader Service Card for more information

### THIS TRUCK WEIGHS AS IT LIFTS



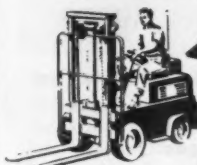
#### with a Martin-Decker Lift-Truck Scale

This low-cost scale can be put on any hydraulic fork lift. It assures a full, safe load. Protects men and equipment. Used to sum up stock. Prevents floor overloads.

For full data, write Martin-Decker Corp., 3431 Cherry Ave., Long Beach 7, Calif., Dept. N-12

**MARTIN-DECKER CORP.**  
HOME OF THE WEIGHT INDICATOR — LONG BEACH, CALIFORNIA

### ...what the Kaar IMP\* did for Westinghouse?



Impossible  
to estimate the  
savings  
in materials  
handling costs



Only in operation at Westinghouse's Sunnyvale, California facility for two months, the IMP radiotelephone communication system has already made history at this plant. Easily installed and immediately adaptable, the IMP system went to work for Westinghouse within hours after delivery.

By keeping trucks, cranes, fork lifts, and switch engines under the constant control of the materials handling supervisor, the IMP has eliminated useless backtracking and empty loads. Machine efficiency has jumped, traffic moves faster, and every trip means a payload. The savings in time — materials — personnel — are impossible to estimate. Call your local Kaar dealer or write for information, and you will learn why Westinghouse is so enthusiastic over the IMP. It will pay you big dividends.



**ENGINEERING CORP.**

2901 MIDDLEFIELD ROAD  
PALO ALTO, CALIFORNIA

Circle 157 on Reader Service Card for more information

Circle 137 on Reader Service Card for more information

# Safer liquid transfer for MODERN INDUSTRY

Want to handle industrial liquids with greater safety? Then install Tokheim hand pumps—specially adaptable to maintenance and production work. They help prevent spilling, slopping, over-filling, dripping. Your plant is kept cleaner—work is speeded—waste halted—accidents prevented.

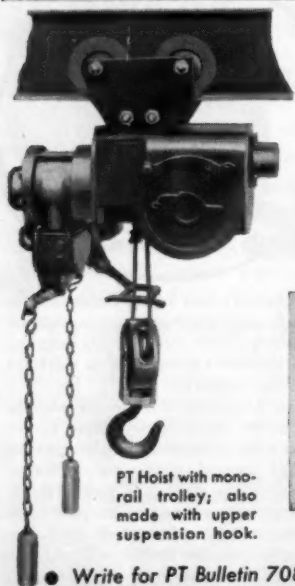
Operating on both forward and backward strokes, these efficient pumps deliver 20 gallons per 100 strokes. Available with hose or spout outlets—also other interchangeable accessories. No plant should be without a battery of Tokheims.

Call your dealer, your Tokheim representative; or write today for literature



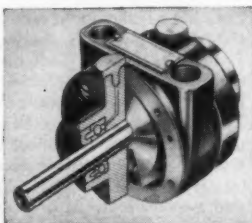
General Products Division  
**TOKHEIM CORPORATION**  
Designers and Builders of Superior Equipment  
1808 Wabash Ave. Since 1907 Port Wayne 1, Ind.  
Subsidiaries: Tokheim N.Y., Laiden, Holland—GenPro, Inc., Shelbyville, Ind.  
Factory Branch: 1309 Howard Street, San Francisco 3, California  
In Canada: Tokheim-Reader of Canada, Ltd., 200 Yonge St., Toronto, Ont.

## NEW! PNEUMATIC HOIST with ROTARY AIR MOTOR



Capacities 250 lbs. to 1 Ton  
Fast Lifting Speeds

- Worm Geared
- Compact—Light Weight
- Exceptionally Smooth Running
- Close, Sensitive Control



PT Hoist with mono-rail trolley; also made with upper suspension hook.

Pulseless, rotary air motor; no pistons, no reciprocating parts.

• Write for PT Bulletin 708

**DETROIT HOIST & MACHINE CO.**  
8269 Morrow St., Detroit 11, Mich.

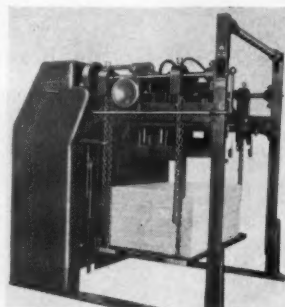
Circle No. 41 on Reader Service Card for more information  
178

## NEW EQUIPMENT SECTION

### Speeds Up Sheet Feeder

The Dexter Folder Co. has redesigned its 6000 pound capacity Sheet Metal Feeder to handle sheets at a continuous rate up to 125 per minute throughout multi-shift operating schedules. Top speeds of previous units is 100 sheets per minute. The feeder automatically separates, lifts, calipers and advances sheets up to 44 x 48 inches in size to the registering or feeding station of the machine to which it is attached.

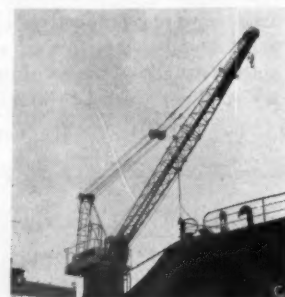
Circle 239 for more information



### Operates From Fixed Mounting

The Unit Crane & Shovel Corp. has developed a new type cargo crane for ships and barges, especially designed to meet all the requirements for cargo handling from a stationary mounting. Called the Unit Mariner Model 360, the unit deviates from conventional revolving cranes by emphasizing added strength in turntable, turntable rollers, hook shoes, A-frame, boom, and boom hoist mechanism.

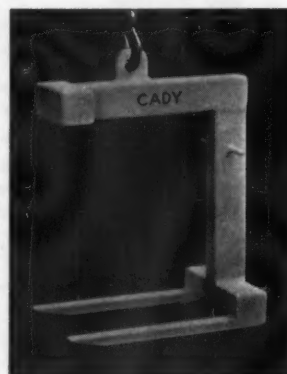
Circle 240 for more information



### Transports Palletized Materials

A new crane attachment for transporting palletized materials under existing cranes has been developed by Cady Metal Fabricating Co. The pallet lifter is particularly adaptable to moving pallet loads between floor levels in plants or across areas where truck aisles do not exist. It is used to load vehicles not generally accessible to fork trucks. Made from alloy steel, the lifters are available in capacities from one ton up. Models without counter-balances or with adjustable forks also are available.

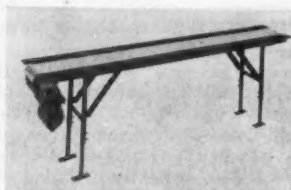
Circle 241 for more information



FLOW



## Conveyor With Leg Room



Metzgar Conveyor Co. has introduced the new JPH-75 "Power Helper" which features a slider bed only 2-3/4 inches thick, including frame and belt. This provides plenty of leg room for seated employees, and a working surface that permits normal non-fatiguing posture for assembly, inspection and other conveyor-top operations. The unit is offered in 3 standard frame widths of 12, 18 and 22 inches, and is mounted on permanent adjustable base stands. Standard speed of 10 feet per minute is provided by a 1/4hp motor which uses 110 volt AC current. Other speed combinations are available.

Circle 242 for more information

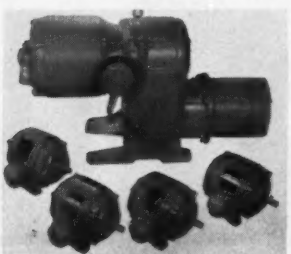
## Steel Box Truck



A tilt-type steel box truck, equipped with pneumatic rubber tires, is offered by The Hamilton Caster & Mfg. Co. The unit is constructed of formed sheet steel, welded and mounted on a hardwood frame, with smooth inside surfaces. Overall size is 26 inches wide, 49 inches long and 24 inches deep. Overall height is 36 inches. The truck is capacity rated to carry a load of 800 pounds. It is designed with a slight tilt, and balances on two rigid center casters, with one ball bearing swivel caster at each end.

Circle 243 for more information

## Provides Synchronized Speed Changes



A new drive system of synchronized variable speed, multiple drives has been developed by the U. S. Electrical Motors Inc. Called the U. S. Varidyne, the heart of the system is a specially designed U. S. Varidyne power unit which interlocks the Varidyne motors by means of electrical impulses. The motors are of the AC, squirrel-cage induction type, connected to the power unit by means of standard 3-phase circuitry. The units are easy to install and have speeds of from 1 to 10,000 RPM; are available in ratios of up to 5.1, and higher speed ratios can be supplied. The motors can be furnished from 1/3 to 25 HP at maximum RPM. A valuable characteristic of the Varidyne system, according to the manufacturer, is that when the motors are operating in tandem, as on a single conveyor, they will share the load equally.

Circle 244 for more information

DECEMBER, 1956

## CROWN MODEL LT-1000 E-Z LIFT

HANDLES LOADS UP TO 1,000 POUNDS  
QUICKLY, EASILY, ECONOMICALLY, SAFELY

**CROWN**  
**E-Z**  
**LIFT**

**MODELS**

**PRICED**

**AS**

**LOW**

**AS**

**\$195<sup>00</sup>**



Model LT-1000—\$240.00  
F.O.B. New Bremen, Ohio

The Crown Model LT-1000 E-Z Lift offers these advantages for factories, printing plants, machine shops, garages, warehouses, foundries, pattern shops, stores—wherever there are lifting jobs:

- Exceptional maneuverability.
- Easily operated by one man.
- Ends danger of lifting injuries.
- Has safety plate platform, overload release, safety guards and brake.
- Rated capacity 1,000 pounds.\*
- Maximum lift 54" — lowers to 5 1/4" from floor — straddle capacity 16 1/4".
- Dependable, manually operated hydraulic lifting mechanism.
- Strong tubular welded steel construction.

## OTHER CROWN E-Z LIFT TRUCK MODELS

- Model FL-1000—1,000 pound capacity fork lift
- Model LT-500—500 pound capacity table lift

\*Capacities rated on 20" load center.

Special lifts engineered to your specifications.

**WRITE TODAY FOR DETAILS!**

**HYDRAULICS DIVISION**

**CROWN CONTROLS Co., Inc.**

NEW BREMEN,  
OHIO

Circle 36 on Reader Service Card for more information

CC18

## CLASSIFIED ADVERTISING SECTION

### USED EQUIPMENT—MEN—JOBS—LINES

Rates: for "Positions Wanted" \$8.00 minimum, limit 25 words. For all other classifications \$10.00 minimum for 25 words; each additional word 25c. Boldface type or all caps, \$12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

#### REPRESENTATIVES WANTED

Manufacturers Representatives to sell new line of light-metal hand and floor trucks to be introduced nationally by established Western manufacturer after January 1st. Exclusive territory. Commission. Write giving background and experience, lines presently selling and territory covered to FLOW, Box 12256.

#### WANTED: MANUFACTURERS REPRESENTATIVE SPECIALIZING IN CONVEYOR SYSTEMS

To handle profitable time-saving specialty which can be used with most conveyor systems. Exclusive territory. Commission. Write, giving background and experience, lines presently handled and territory covered to FLOW, Box 12156.

**EXPERIENCED REPRESENTATIVE**—to contact, advise and sell latex-seal envelopes, blister-packs and wrappers to industrial and consumer accounts. Now supplying automotive, hardware, electrical equipment, machinery fields. Package development and design service available for your prospects. Territories open in New England, Pennsylvania, South-East. Write telling your sales and packaging experience, present trade contacts, territory covered. Write c/o FLOW, Box 12456.

### Job Hunting?

Here's a FLOW service to aid those who hesitate to answer "blind" advertisements in our Help Wanted column. Rather than jeopardize your present job by having your letter fall into the hands of your own employer or some other unwanted firm, just send FLOW a list of the "taboo" firms along with your letter. If the advertiser is on your list your letter will be returned to you.

## FOR SALE

### INVENTORY SALE—BRAND NEW

Tapered roller gravity curves: All rollers set low on 4" centerline centers—inside widths shown. Seven 24½" \$80 each. Twenty-nine 16½", \$58 each.

Belt Conveyors: heavy duty. Complete less belt and power unit. Four 20' long, 2¼" roller bed, 4" end rollers, 10" center drive pulley, 22" inside width, 7" structural channel frame. All bearings grease sealed self-aligning. Print available; \$525 each.

Hydraulic Rams: Heavy duty. Hydro-Pneumatic. Seven 20 ton capacity, bore 4", stroke 5". \$90 each.

Portable Belt Conveyors—Styl-O-Veyor, Sr. 4-way adjustable, patented, nothing similar on market, 20' long, ¾ HP, one or three phase, three 14" wide units, \$972 each. One 24" wide unit \$1176. Bulletin available.

Pallet Cargo Trailer Bed, loader and unloader. Complete, constructed of magnesium and aluminum, bed frame complete with diamond plate bed, hydraulically raised and lowered 4 lane roller gravity runs; 27' long in six easily installed sections. Priced at one-half cost; net price \$2500. Bulletin available.

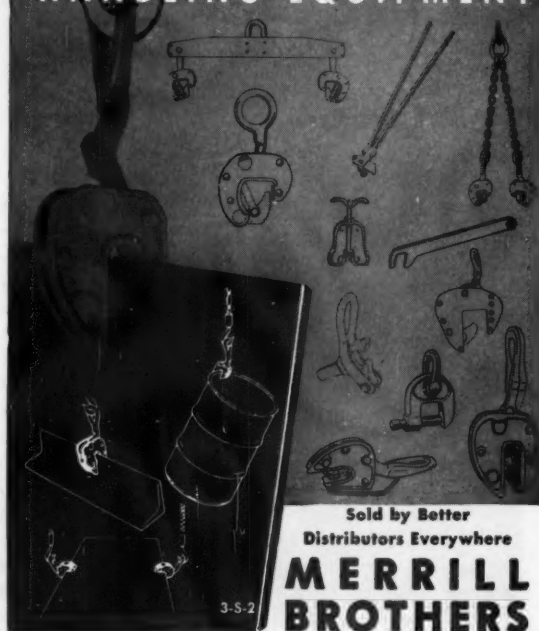
All offers subject to prior sale. Prices net FOB Long Island City, N. Y. Island Equipment Corp., 27-01 Bridge Plaza, North, Long Island City 1, N. Y.

## Excellent Opportunity for PLANT ENGINEER

Progressive, fast-growing regional brewery seeks plant engineer with good working knowledge of plant lay-out, materials handling, effective maintenance methods. Experience in refrigeration, electronic devices, hydraulics helpful. Will be department head responsible for activating, supervising plant-wide maintenance program. Should have minimum eight years' experience similar work. Excellent working conditions. Liberal employee benefits. Relocation expenses paid. Please write complete details of education and experience, including initial salary requirements. All replies confidential.

Write Box: 12356  
Flow Magazine

## MERRILL MATERIAL HANDLING EQUIPMENT



Sold by Better  
Distributors Everywhere

**MERRILL  
BROTHERS**

For Interesting Information  
write

56-74 ARNOLD AVE., MASPETH, N. Y.

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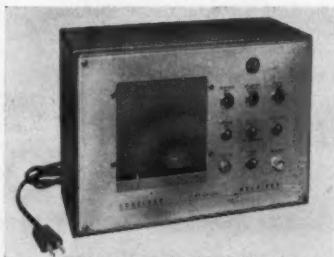
## New Two-Way Receiver . . . Automatically Tunes to Conelrad Channel

**S**PECIAL civil defense needs for users of two-way mobile radio equipment are met by a new type Conelrad receiver, which automatically switches to the Conelrad frequency in case of civil defense radio alert.

The new receiver operates silently and unattended, and provides both visual and audible warnings when a Conelrad radio alert is broadcast.

Under the new rules of the Federal Communications Commission, which become effective January 2, 1957, all stations in amateur, standard broadcast, public safety, special industrial and land transportation radio services are required to observe all Conelrad radio alerts.

Two Conelrad frequencies, 640 and 1240, have been established



for broadcast of civil defense news. Upon receipt of the proper order, commercial broadcast stations announce the Conelrad alert, then leave the air.

By using the new Conelrad receiver, it is possible to keep tuned to any standard broadcast frequency, and still receive civil defense broadcasts in the event of a Conelrad alert.

A toggle switch permits selection of audible or silent speaker

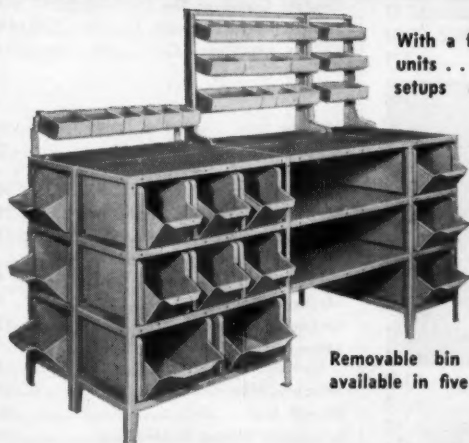
operation. If the receiver is set for silent monitoring, the speaker is automatically turned "on" with the transmission of a Conelrad alert. At the same time, the receiver is automatically switched to the Conelrad frequency, regardless of its previous setting. At the conclusion of the alert, it automatically returns to the broadcast band to which it was tuned.

The unit measures 9½ inches high, 13½ inches wide, 6 inches deep and weighs 15 pounds. Warning lights indicate the channel to which the receiver is tuned, and give visual indication of an alert. An additional alarm feature, a plug-in circuit at the rear, can be used to activate additional warning devices such as buzzers, bells or lights.

*Courtesy Radio Corp. of America*

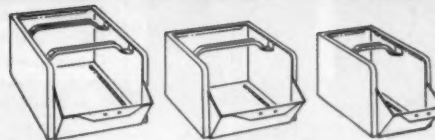
# Bathey

YOU CAN BUILD THIS MODERN ASSEMBLY  
STATION WITH BATHEY MODULE EQUIPMENT

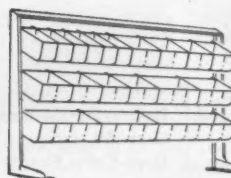


With a few integrated  
units . . . a variety of  
setups are possible.

Removable bin boxes  
available in five sizes.



3 SIZES OF TOTE PANS



BENCH BIN UNIT



MODULE STAND

You are sure to find the right combination for YOUR  
production, storage or handling problems. Design and  
build your own equipment with Bathey module units.

DEALERS IN PRINCIPLE CITIES

Write for brochure on complete Bathey line

B-12

## BATHEY MANUFACTURING CO.

100 SOUTH MILL ST.

PLYMOUTH, MICHIGAN

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SWIVEL



RIGID

## WHAT'S NEW?

### ai SERIES 17

A new caster series from Albion Industries. Designed for any application requiring light weight, high capacity, and low overall height. Recommended for furniture, food containers, dollies, portable cabinets, bins and baskets. Cadmium plated for positive rust resistance. 3" diameter wheel with choice of treads. Capacities to 300 lbs.



RIGID



SWIVEL

### ai SERIES 21

Engineered for light and medium industrial use, with drop forged steel top plate, structural steel fork and ball bearing swivel load race. Fork base is hardened to resist wear. Cadmium plated. Choice of 3 1/4", 4" or 5" diameter wheels with choice of treads. Capacities to 500 lbs.

Like all Albion Industries Casters, the Series 17 and the Series 21 are unconditionally guaranteed to carry the static loads described in the descriptive literature. Check Albion "Load-Rated" Casters before you buy. Write for literature and complete specifications.

ALBION INDUSTRIES, INC.

ALBION, MICHIGAN

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DECEMBER, 1956

## Ask Standard how to cut costs with conveyors



One of two Inclinebelt conveyors that carry parts to reversible live roller conveyor at second level. Belt conveyors are reversible to bring down outgoing parts. Note minimum space used for conveyors.

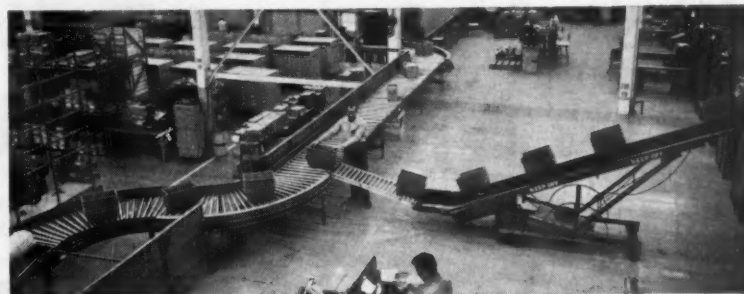
### Multi-level conveyors help Douglas Aircraft CUT STORAGE AREA BY 2/3

When it's difficult to spread out — look up! That's what the El Segundo Division of Douglas Aircraft did when confronted with the need to triple the capacity of a parts stock-room facility.

Today, instead of stocking parts on one level, they're using three. Movement of parts in and out of all three levels is quick, simple and

efficient. They're doing it with Standard conveyors.

This relatively simple solution to what could have been a difficult problem is one example of how Standard Conveyors pay off in every industry. STANDARD CONVEYOR COMPANY, North St. Paul 9, Minnesota. Sales and Service in Principal Cities.



Third level is reached via portable Handibelt conveyor from reversible live roller conveyor. Patented easy-adjustment features of Handibelt permit quick reversing of flow.



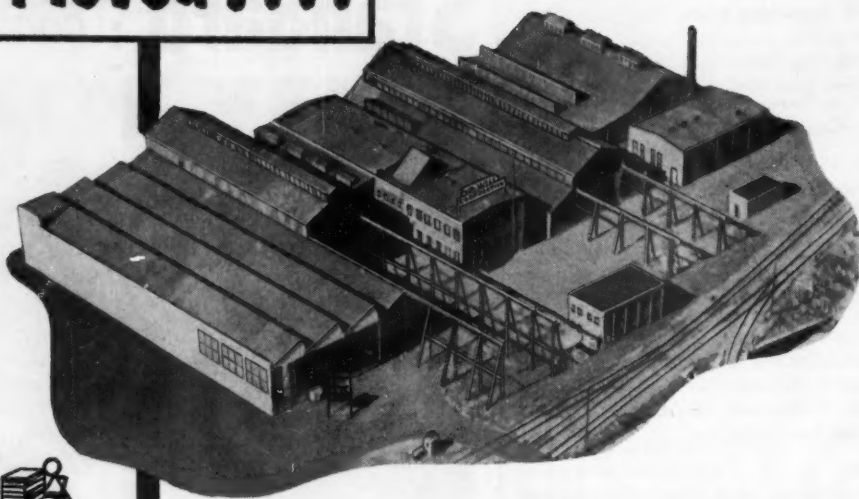
For details on Standard Conveyors, help in selecting the right type and size to meet your needs, contact the Standard representative listed in your classified phone book or write direct. Ask for Bulletin A-12.



GRAVITY & POWER  
CONVEYORS

Circle No. 128 on Reader Service Card for more information

# We've Moved!...



Fab-weld Representatives and Management  
wishes to thank our many customers and friends for making  
this move necessary.

Because of your demand for Fab-weld  
products, we have expanded our facilities and  
organization to meet your requirements.



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CORPORATION

SIMPSON  
LACKAWANNA COUNTY  
PENNSYLVANIA

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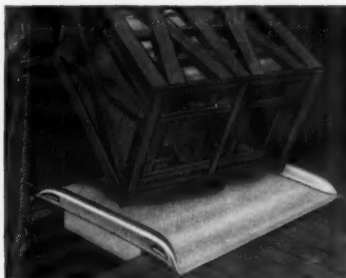


# WHICH OF THESE DOCK LOADING PROBLEMS IS YOURS?



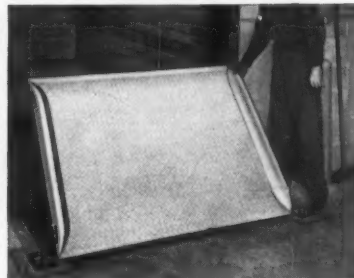
## ☐ TRUCK DOCK?

Magliner dock boards meet today's cost-saving requirements for fast, efficient truck-trailer loading. Boards are magnesium-light for safe, easy one man handling.



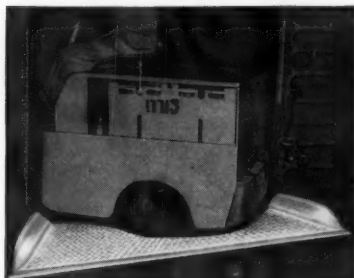
## ☐ RAIL DOCK?

Curved tracks, reefer cars, varying dock-to-car spans, door widths, etc. All pose specific problems—quickly solved with a Magliner dock board.



## ☐ MULTI-STATION LOADING?

Magliner Perma-Docks—a permanently installed leveling system . . . recessed into dock. One man easily raises or lowers board. Power operation optional.



## ☐ CROWDED, NARROW DOCK?

Magliner flared dock boards permit sharp turns in crowded, narrow areas.



## ☐ GREAT HEIGHT DIFFERENCES?

Board-and-ramp combination lengthens slope, reduces grade. Board may be used independently.



## ☐ GROUND LEVEL PLANT?

Magliner Mobile Loading Ramp services rail cars or truck trailers. A loading dock on wheels. One man moves it!

**You can quickly, safely and easily solve it  
with a MAGLINER Magnesium Dock Board!**

Is one of these loading problems yours? They are typical examples of how Magliner magnesium dock boards have provided practical cost-saving solutions to thousands of difficult dock problems.

Every dock is different . . . No two loading problems are exactly alike. Many variable factors, such as equipment, loads, plant layout, operating conditions, etc.—determine which Magliner dock board will meet your specific requirement, and do your job best! Whichever Magliner dock board is recommended for your operation, it will speed loading . . . get more out of power trucks and other loading equipment . . . keep costs down and output up! It will have all the outstanding design and construction advantages which have made Magliner a recognized authority in this highly specialized field.

Magliner dock boards are light . . . strong . . . safe! Made of magnesium for easy, one man handling, they

safely handle loads up to 20,000 lbs., protect men and equipment against accidents and costly damage.

A low-cost investment, Magliner dock boards provide dependable, long-life service with less maintenance, and will pay you big dividends over a long period of time. Ask for the facts today—write for Bulletin DB-204.



MAGLINE INC. • P. O. BOX 212 • PINCONNING, MICH.

Canadian Factory: Magline of Canada, Ltd., Renfrew, Ontario

Circle No. 89 on Reader Service Card for more information

# MATERIAL HANDLING IS A **BIG** MARKET -- IT TAKES **BIG** COVERAGE TO MERCHANDISE IN IT

*and  
here's  
how  
to  
cover  
it*

## DOLLAR VOLUME

Cutting horizontally across all categories of industry, the market for material handling, protective packaging and shipping equipment and supplies now conservatively exceeds \$2,500,000,000.

## THE FLOW PACKAGE

**FLOW** (monthly) and  
**MATERIAL HANDLING ILLUSTRATED** (quarterly)



**PROVIDES REALISTIC COVERAGE OF MORE THAN 145,000 MATERIAL HANDLING BUYERS IN EVERY MARKET**

**IN EVERY  
MAJOR  
MARKETING  
AREA**

Geographical Area	Flow (Basic) Circulation	Material Handling Illustrated Circulation	Flow Package Coverage
New England .....	1867	7740	9607
Middle Atlantic .....	8135	17,324	25,459
South Atlantic .....	4462	8627	13,089
East No. Central .....	11,110	29,087	40,097
East So. Central .....	1817	5799	7616
West No. Central .....	2848	10,002	12,850
West So. Central .....	3104	7880	10,984
Mountain .....	1164	4090	5254
Pacific .....	2937	6716	9653
U. S. Territories .....	358	5	363
Canada .....	1462	78	1540
Foreign .....	765	46	811
Miscellaneous .....	3649	3953	7602
Total Circulation .....	43,678	102,213	145,891

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THE FIRST MAGAZINE OF MATERIAL HANDLING

812 HURON ROAD

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